A 57.46/3:997/5

97 ites
nt of

Natural
Resources
Conservation
Service

Montana
Basin Outlook Report
May 1, 1997

PLEASE RETURN

OCT 7 2005
PLEASE RETURN

Montana State Library
3 0864 1004 8668 0

Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

For more water supply and resource management information, contact:
See Attached List

How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs and marital or familial status. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-2791.

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, D.C., 20250, or call 1-800-245-6340 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

United States Department of Agriculture
Natural Resources Conservation Service (formerly the Soil Conservation Service)
Bozeman, Montana

Where to Get More Information

Beaverhead County
Victor Hager
683-4963

Big Horn County
Dicksie Michael
665-3777

Blaine County
Matthew Crampton
357-2310

Broadwater County
Kelly Morris
266-3146

Carbon County
Gregory Evertz
962-3641

Carter County
Wayne Yost
775-6355

Cascade County
Danny Burgett
727-3603

Choteau County
Dale Krause
622-5627

Custer County
Roger Goff
232-2439

Daniels County
Stanley French
487-2872

Dawson County
Michael Carlson
365-5565

Deer Lodge County
Glen Green
846-1703

Fallon County
ann Fischer
778-2217

Fergus County
Theodore Hawn
538-7401

Flathead County
Mary Pochelon
752-4242

Gallatin County
Gordon Hill
587-6929

Garfield County
Clarence Clayton
557-2232

Glacier County
Bonnie Thies
873-4292

Golden Valley County
John Rouane Jr.
323-2103

Granite County
Annette Johnson
859-3291

Hill County
Karen Hoffman
265-6252

Jefferson County
Laurel Ovitt
287-3215

Judith Basin County
Larry Zarecor
566-2311

Lake County
David Wolf
883-5875

Lewis and Clark County
Nancy Basting
449-5278

Liberty County
Eileen Eide
759-5778

Lincoln County
Angel Rosario
296-2233

Madison County
Mike Barron
842-5741

McCone County
Rusty Irions
485-2660

Meagher County
Otto Ohlson
547-3633

Mineral County
John Blaine
251-4826

Missoula County
John Blaine
251-4826

Musselshell County
John Rouane Jr.
323-2103

Park County
Geri Sullivan
222-2899

Petroleum County
Theodore Hawn
538-7401

Phillips County
Lorna Stolen
654-1334

(over)

Pondera County
Phyllis Philipps
278-3922

Powder River County
Carol Hilliard
436-2417

Powell County
Glen Green
846-1703

Prairie County
Bob Prongua
637-5381

Ravalli County
Keith Robertson
363-5010

Richland County
Kim Whipple
482-2110

Roosevelt County
Richard Iversen
787-5232

Rosebud County
Stewart Greer
342-5466

Sanders County
Stuart Lomax
826-3701

Sheridan County
Monica Friedrich
765-1801

Silver Bow County
Laurel Ovitt
287-3215

Stillwater County
Philip Sandoval
322-5359

Sweet Grass County
Dan Glasgow
932-5160

Teton County
Kaycee Ferster
466-5722

Toole County
David Pratt
434-5835

Treasure County
Stewart Greer
342-5466

Valley County
Lanny Walker
228-4337

Wheatland County
John Oiestad
632-5534

Wibaux County
Carla Lawrence
778-2217

Yellowstone County
Shad Weber
657-6527

1/2/97

BASIN SUMMARY OF SNOW COURSE DATA

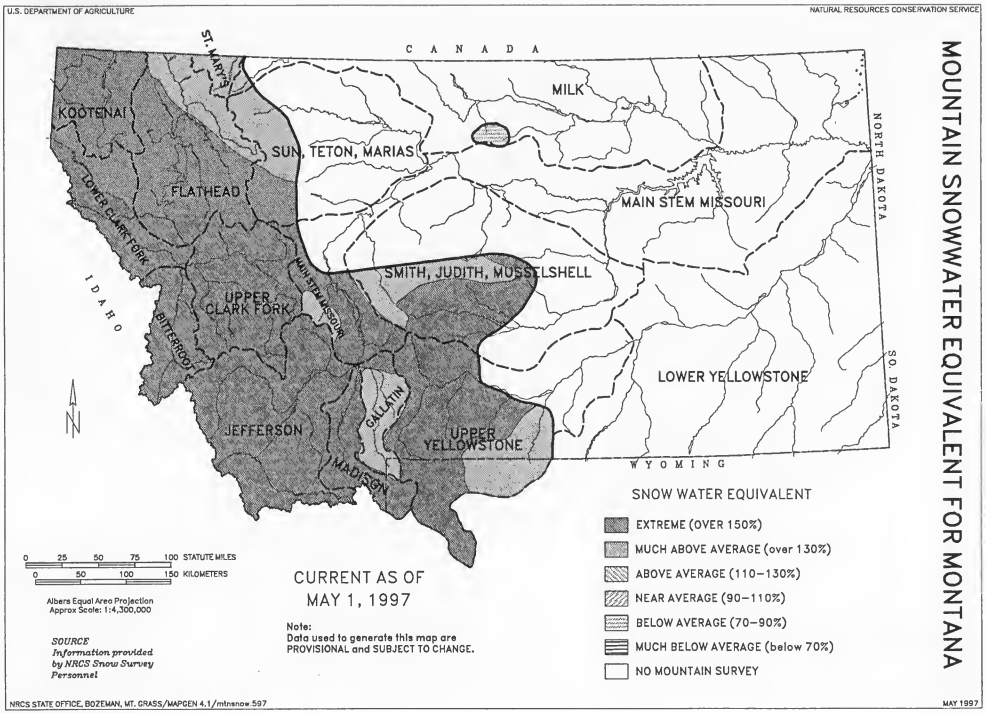
MAY 1997

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
ABE LINCOLN	4440	4/29/97	58	28.2	10.5	--
ABUNDANCE LAKE	8800	5/05/97	84	34.2	32.2	22.6
ALBRO LAKE PILLOW	8300	5/01/97	---	32.3	--	--
AMBROSE	6480	4/24/97	64	22.4	12.3	12.1
ASHLEY LAKE	4000	4/29/97	20	8.0	.3	1.2
ARCH FALLS	7350	4/30/97	59	19.6	15.4	13.7
ASHLEY DIVIDE	4820	4/29/97	19	7.8	.3	1.0
BADGER PASS PILLOW	6900	5/01/97	---	49.1	41.0	37.8
BANFIELD MTN PILLOW	5600	5/01/97	---	34.8	19.4	18.3
BAREE CREEK	5500	4/29/97	132	61.8	37.2	43.0
BAREE MIDWAY	4600	4/29/97	116	53.0	23.4	29.4
BAREE TRAIL	3800	4/29/97	31	13.8	.0	1.3
BARKER LAKES PILLOW	8250	5/01/97	---	23.8	18.4	16.0
BASIN CREEK PILLOW	7180	5/01/97	---	14.2	9.8	10.0
BASSOO PEAK	5150	4/30/97	29	11.4	2.2	5.7
BEAGLE SPGS PILLOW	8850	5/01/97	---	15.5	8.6	8.8
BEAR BASIN	8150	4/30/97	72	30.6	24.8	22.0
BEAVER CREEK PILLOW	7850	5/01/97	---	30.8	23.2	20.5
BIG CREEK	6750	5/02/97	151	70.1	51.7	49.8
BIG SNOWY	7150	4/30/97	72	27.3	20.4	24.3
BISSON CREEK PILLOW	4920	5/01/97	---	14.0	5.5	2.5
BLACK BEAR PILLOW	7950	5/01/97	---	68.9	50.1	39.8
BLACK MOUNTAIN	7750	4/25/97	63	23.2	15.9	17.8
BLACK PINE PILLOW	7100	5/01/97	---	18.5	16.9	12.0
BLACKTAIL	5650	4/29/97	54	24.5	10.4	7.0
BLOODY DICK PILLOW	7550	5/01/97	---	19.6	19.0	10.5
BLUE LAKE	5900	5/01/97	---	32.8E	22.9	23.9
BOTS SOTS	7750	4/29/97	29	10.7	10.2	8.1
BOULDER MTN PILLOW	7950	5/01/97	---	31.4	25.3	21.7
BOX CANYON PILLOW	6700	5/01/97	---	11.1	12.6	3.8
BOXELDER CREEK	5100	4/30/97	18	5.2	2.2	2.2
BRACKETT CR PILLOW	7320	5/01/97	---	37.9	27.7	22.7
BRANHAM LAKES	8850	4/29/97	109	47.6	41.8	33.2
BRIDGER BOWL	7250	4/28/97	96	45.4	28.7	29.0
BRUSH CREEK TIMBER	5000	5/01/97	19	6.8	1.7	6.0
BULL MOUNTAIN	6600	4/25/97	31	11.4	4.4	3.1
CABIN CREEK	5200	4/29/97	16	4.1	1.6	1.9
CALL ROAD	8050	5/01/97	52	17.2	15.5	13.0
CALVERT CR PILLOW	6430	5/01/97	---	12.6	7.0	3.4
CAMP SENIA	7890	4/29/97	36	11.0	9.4	8.4
CARROT BASIN PILLOW	9000	5/01/97	---	46.0	38.7	31.2
CARTER CREEK	7400	4/28/97	28	11.2	3.8	--
CHESSMAN RESERVOIR	6200	4/29/97	3	1.0	.0	2.4
CHICKEN CREEK	4060	4/28/97	44	19.9	8.4	3.6
CLOVER MDW PILLOW	8800	5/01/97	---	25.7	23.1	19.0
COLE CREEK PILLOW	7850	5/01/97	---	19.8	21.8	20.6
COMBINATION PILLOW	5600	5/01/97	---	4.1	.0	3.2
COPPER BOTTOM PILLOW	5200	5/01/97	---	13.0	8.5	8.1
COPPER CAMP PILLOW	6950	5/01/97	---	43.1	43.0	35.3
COPPER MOUNTAIN	7700	4/28/97	49	17.8	14.5	10.6
COTTONWOOD CREEK	6400	4/29/97	36	12.6	3.6	7.6
COYOTE HILL	4200	4/28/97	29	12.1	3.9	3.0
CRYSTAL LAKE PILLOW	6050	5/01/97	---	15.5	4.0	10.9

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
DAD CREEK LAKE	8400	5/05/97	62	22.6	18.8	16.6
DAISY PEAK	7600	5/02/97	45	14.1	9.8	8.7
DAISY PEAK	7600	5/02/97	45	14.1	9.8	8.7
DALY CREEK PILLOW	5780	5/01/97	---	16.6	8.9	5.8
DARKHORSE LK. PILLOW	8700	5/01/97	---	49.0	40.9	35.3
DAVIS CREEK	5400	4/30/97	69	36.7	7.7	21.5
DEADMAN CR PILLOW	6450	5/01/97	---	13.4	8.0	6.9
DISCOVERY BASIN	7050	4/30/97	49	17.9	13.3	10.0
DIVIDE PILLOW	7800	5/01/97	---	16.3	12.9	12.1
DIX HILL	6400	4/27/97	19	8.5	3.2	4.4
DUPUYER CREEK PILLOW	5750	5/01/97	---	12.2	9.1	8.5
EAST FORK R.S.	5400	4/24/97	18	5.6	.0	.9
ELK HORN SPRINGS	7800	5/03/97	39	14.1	12.2	7.7
ELK PEAK	8000	4/28/97	64	25.8	17.0	19.2
EMERY CREEK PILLOW	4350	5/01/97	---	18.1	5.9	8.5
FATTY CREEK	5500	5/02/97	95	41.3	21.7	23.6
FISH CREEK	8000	4/29/97	51	17.2	--	12.4
FISHER CREEK PILLOW	9100	5/01/97	---	60.4	50.6	38.7
FIVE-BULL	5700	4/30/97	17	7.6	.0	3.2
FLATTOP MTN PILLOW	6300	5/01/97	---	66.9	58.5	48.4
FLEECER RIDGE	7500	4/25/97	60	21.4	14.2	8.4
FOOLHEN	8280	5/03/97	70	28.0	23.2	18.2
FOUR MILE	6900	4/30/97	31	11.5	6.6	6.9
FOURTH OF JULY	3450	4/29/97	14	5.9	.0	1.0
FREIGHT CREEK	6000	5/01/97	---	18.9E	11.2	13.2
FROHNER MDWS PILLOW	6480	5/01/97	---	10.4	7.6	7.1
GARVER CREEK PILLOW	4250	5/01/97	---	13.6	5.6	3.3
GARVER CREEK	4250	4/30/97	34	14.5	6.7	4.0
GOAT MOUNTAIN	7000	4/30/97	39	13.5	7.6	8.6
GOLD STONE	8100	5/02/97	65	25.9	24.4	18.0
GRASSHOPPER	7000	4/28/97	25	8.0	1.9	4.6
GRAVE CRK PILLOW	4300	5/01/97	---	17.3	8.5	9.0
GRIFFIN CR DIVIDE	5150	4/30/97	33	13.6	4.2	6.3
HAND CREEK PILLOW	5030	5/01/97	---	14.6	6.1	8.3
HAWKINS LAKE PILLOW	6450	5/01/97	---	36.0	28.0	30.4
HEBGEN DAM	6550	5/03/97	23	9.8	8.5	6.8
HELL ROARING DIVIDE	5770	4/30/97	89	42.1	35.9	30.1
HERRIG JUNCTION	4850	4/28/97	81	32.3	28.7	23.2
HOLBROOK	4530	5/01/97	---	9.9E	.0	1.7
HOODOO BASIN	6050	5/01/97	---	75.4E	--	51.2
HOODOO BASIN PILLOW	6050	5/01/97	---	76.7	58.2	47.2
HOODOO CREEK	5900	5/01/97	---	72.2E	--	47.1
ICEBERG LAKE NO 3	5600	4/28/97	97	45.1	26.1	29.2
INDEPENDENCE	7850	4/29/97	60	24.4	22.5	17.0
INTERGAARD	6450	4/29/97	38	13.0	6.0	7.2
JOHNSON PARK	6450	5/02/97	8	2.4	.0	2.3
JOSEPHINE LOWER NO 9	4900	4/25/97	54	23.0	6.9	15.1
KIWANIS CAMP	3720	4/30/97	0	.0	.0	.2
KRAFT CREEK PILLOW	4750	5/01/97	---	22.3	8.0	5.8
LAKE CREEK	6100	5/01/97	17	5.2	3.2	3.1
LAKEVIEW CANYON	6930	4/29/97	36	12.0	9.2	11.0
LAKEVIEW RDG. PILLOW	7400	5/01/97	---	14.9	11.6	9.2
LEMHI RIDGE PILLOW	8100	5/01/97	---	17.4	14.9	10.8
LICK CREEK PILLOW	6860	5/01/97	---	17.2	11.3	11.2
LITTLE PARK	7400	4/30/97	58	24.8	18.6	16.4
LOGAN CREEK	4300	5/01/97	18	7.3	2.0	2.2
LONE MOUNTAIN PILLOW	8880	5/01/97	---	32.1	29.5	20.8
LOWER TWIN PILLOW	7900	5/01/97	---	28.4	22.4	21.9
LUBRECHT PILLOW	4680	5/01/97	---	.0	.0	1.7

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
LUBRECHT FOREST NO 3	5450	4/30/97	15	6.6	.3	3.0
LUBRECHT FOREST NO 4	4650	4/30/97	0	.0	.0	.2
LUBRECHT FOREST NO 6	4040	4/30/97	0	.0	.0	.1
LUBRECHT HYDROPLOT	4200	4/30/97	0	.0	.0	.1
MADISON PLT PILLOW	7750	5/01/97	---	42.7	30.6	23.8
MANY GLACIER PILLOW	4900	5/01/97	---	16.3	2.3	8.0
MARIAS PASS	5250	4/30/97	58	27.0	14.5	14.4
MAYNARD CREEK	6210	4/28/97	58	24.8	9.7	15.2
MIDDLE MILL CREEK	7850	4/29/97	52	21.2	18.8	16.6
MILL CREEK	7500	4/29/97	49	19.5	14.8	11.0
MINERAL CREEK	4000	4/28/97	56	24.4	12.0	11.2
MONUMENT PK PILLOW	8850	5/01/97	---	36.7	30.2	23.8
MOSS PEAK PILLOW	6780	5/01/97	---	71.1	51.5	41.8
MOUNT ALLEN NO 7	5700	4/25/97	128	57.0	35.6	43.8
MT LOCKHART PILLOW	6400	5/01/97	---	29.9	25.4	21.9
MULE CREEK PILLOW	8300	5/01/97	---	26.3	21.3	17.0
NEVADA CREEK PILLOW	6480	5/01/97	---	22.2	18.1	12.5
NEVADA RIDGE PILLOW	7020	5/01/97	---	21.0	20.2	9.1
NEZ PERCE CMP PILLOW	5650	5/01/97	---	21.4	16.0	11.7
NEZ PERCE CREEK	6600	4/28/97	23	9.4	4.8	3.4
NEZ PERCE PASS	6570	4/24/97	58	22.6	15.6	13.9
NOISY BASIN PILLOW	6040	5/01/97	---	72.8	48.6	44.0
N.F. ELK CR PILLOW	6250	5/01/97	---	16.4	11.0	9.6
NF JOCKO PILLOW	6330	5/01/97	---	70.7	55.2	46.3
N.E. ENTRANCE PILLOW	7350	5/01/97	---	8.6	9.2	5.9
NOTCH	8500	5/05/97	67	25.6	21.5	18.5
OPHIR PARK	7150	4/27/97	54	22.2	18.0	17.4
PETERSON MEADOWS	7200	4/30/97	50	16.4	11.0	11.0
PICKFOOT CRK PILLOW	6650	5/01/97	---	11.7	8.3	4.8
PIEGAN PASS NO 6	5500	4/25/97	107	48.3	24.4	37.5
PIKE CREEK PILLOW	5930	5/01/97	---	40.2	29.8	27.8
PIPESTONE PASS	7200	4/29/97	32	10.0	4.6	5.0
PLACER BASIN PILLOW	8830	5/01/97	---	29.0	25.2	21.2
PORCUPINE PILLOW	6500	5/01/97	---	11.5	6.0	3.9
POTOMAGETON PARK	7150	5/01/97	37	15.9	10.0	9.4
PTARMIGAN	5800	4/28/97	105	45.8	32.8	36.2
RED MOUNTAIN	6000	4/28/97	59	26.7	20.7	17.5
REVAIS CREEK	4800	4/28/97	0	.0	.0	.0
ROCK CREEK	5600	4/30/97	28	11.0	.0	5.4
ROCK CREEK MEADOW	8160	4/28/97	84	33.4	28.7	24.2
ROCKER PEAK PILLOW	8000	5/01/97	---	20.6	18.0	17.7
ROCKY BOY PILLOW	4700	5/01/97	---	.0	.0	1.9
ROCKY BOY	4700	4/30/97	0	.0	.0	1.4
SACAJAWEA	6550	4/28/97	52	24.0	11.9	12.7
SADDLE MTN PILLOW	7900	5/01/97	---	42.9	39.3	27.6
SHORT CREEK PILLOW	7000	5/01/97	---	7.6	6.2	2.0
SHOWER FALLS PILLOW	8100	5/01/97	---	37.6	32.1	28.0
SILVER RUN PILLOW	6630	5/01/97	---	.0	.0	1.2
SKALKAHO PILLOW	7260	5/01/97	---	42.6	36.0	26.2
SLIDE ROCK MOUNTAIN	7100	4/29/97	61	24.6	16.3	17.2
SMUGGLER MINE	6960	4/29/97	30	11.3	9.5	9.0
S.F. SHIELDS PILLOW	8100	5/01/97	---	35.0	24.2	19.1
SPOTTED BEAR MTN.	7000	5/02/97	40	17.1	8.8	9.6
SPUR PARK PILLOW	8100	5/01/97	---	30.3	27.0	23.6
SQUAW PEAK PILLOW	6150	5/01/97	---	30.3	16.6	14.9
STAHL PEAK PILLOW	6030	5/01/97	---	51.9	54.8	36.5
STEMPLE PASS	6600	4/29/97	41	14.8	7.0	10.3
STRYKER BASIN	6180	4/28/97	99	47.2	44.4	35.8
STUART MOUNTAIN	7400	5/02/97	120	53.6	41.0	32.3

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
STUART MOUNTAIN PILL	7400	5/01/97	---	52.3	40.4	30.4
SUCKER CREEK	3960	4/30/97	0	.0	.0	.3
TAYLOR ROAD	4080	4/30/97	0	.0	.0	.5
TEN MILE LOWER	6600	5/07/97	24	7.2	2.0	5.4
TEN MILE MIDDLE	6800	5/07/97	45	14.8	10.8	12.4
TEPEE CREEK PILLOW	8000	5/01/97	---	19.9	16.2	13.0
TIMBERLINE CREEK	8850	4/29/97	70	25.5	23.0	17.8
TIZER BASIN PILLOW	6840	5/01/97	---	12.8	8.9	10.3
TRAIL CREEK	7090	5/02/97	31	10.8	9.5	6.3
TRINKUS LAKE	6100	5/02/97	146	69.6	43.1	43.1
TRUMAN CREEK	4060	4/30/97	6	2.3	.0	.6
TV MOUNTAIN	6800	5/02/97	73	31.6	21.0	18.7
TWELVEMILE PILLOW	5600	5/01/97	---	26.4	4.9	12.4
TWENTY-ONE MILE	7150	4/28/97	48	20.4	19.0	14.8
TWIN CREEKS	3580	5/02/97	31	13.0	.0	1.8
TWIN LAKES PILLOW	6400	5/01/97	---	69.4	45.4	39.8
UPPER HOLLAND LAKE	6200	5/02/97	113	52.8	39.8	35.2
WALDRON PILLOW	5600	5/01/97	---	14.4	9.4	6.5
WARM SPRINGS PILLOW	7800	5/01/97	---	36.7	34.7	24.9
WEASEL DIVIDE	5450	4/30/97	94	47.3	35.8	33.6
WEST YELLOWSTONE	6700	4/28/97	26	10.6	8.3	7.1
WHISKEY CREEK PILLOW	6800	5/01/97	---	22.8	19.8	15.2
WHITE MILL PILLOW	8700	5/01/97	---	42.5	39.5	26.3
WHITE PINE RIDGE	8850	5/05/97	29	10.4	3.2	5.8
WILLOW CREEK	6500	4/29/97	23	7.2	4.0	4.4
WOOD CREEK PILLOW	5960	5/01/97	---	16.1	10.2	8.6
WRONG CREEK	5700	4/28/97	42	16.2	10.6	9.2
WRONG RIDGE	6800	4/28/97	60	23.9	18.8	18.6

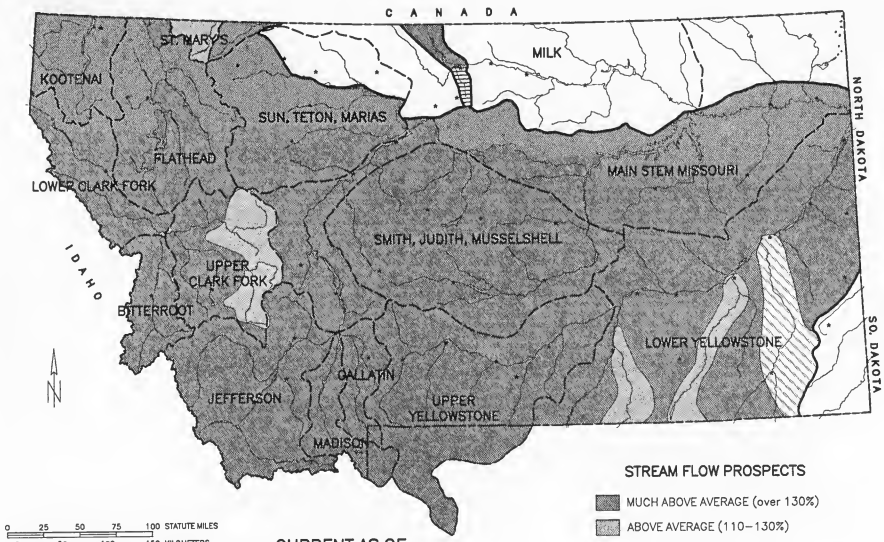

U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA
C A N A D A
ST. MARY'S
MILK
KOOTENAI
SUN, TETON, MARIAS
FLATHEAD
MAIN STEM MISSOURI
NORTH DAKOTA
LOWER CLARK FORK
SMITH, JUDITH, MUSSELSHELL
MAIN STEM MISSOURI
I D A H O
UPPER CLARK FORK
BITTERROOT
LOWER YELLOWSTONE
SO. DAKOTA
GALLATIN
JEFFERSON
UPPER YELLOWSTONE
MADISON
W Y O M I N G
N
SNOW WATER EQUIVALENT
EXTREME (OVER 150%)
MUCH ABOVE AVERAGE (over 130%)
ABOVE AVERAGE (110–130%)
NEAR AVERAGE (90–110%)
BELOW AVERAGE (70–90%)
MUCH BELOW AVERAGE (below 70%)
NO MOUNTAIN SURVEY
0 25 50 75 100 STATUTE MILES
0 50 100 150 KILOMETERS
Albers Equal Area Projection
Approx Scale: 1:4,300,000
SOURCE
Information provided by NRCS Snow Survey Personnel
CURRENT AS OF MAY 1, 1997
Note:
Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.
NRCS STATE OFFICE, BOZEMAN, MT. GRASS/MAPGEN 4.1/mtnsnow.597
MAY 1997

U.S. DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

STREAM FLOW PROSPECTS FOR MONTANA

Spring and Summer Period



Albers Equal Area Projection
Approx Scale: 1:4,300,000

SOURCE:
Information provided by NRCS Snow Survey Personnel.

CURRENT AS OF
MAY 1, 1997

Note:
Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.

STREAM FLOW PROSPECTS

- MUCH ABOVE AVERAGE (over 130%)
- ABOVE AVERAGE (110–130%)
- NEAR AVERAGE (90–110%)
- BELOW AVERAGE (70–90%)
- MUCH BELOW AVERAGE (below 70%)
- NOT FORECAST
- NRCS Office Locations

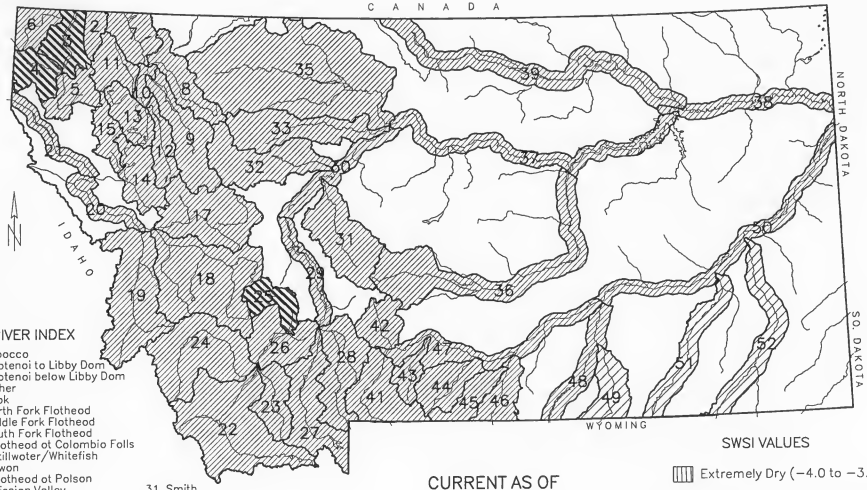
NRCS STATE OFFICE, BOZEMAN, MT. GRASS/MAPGEN 4.1/strflow.597

MAY 1997

U.S. DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

SURFACE WATER SUPPLY INDEX (SWSI) VALUES



RIVER INDEX

2. Tobacco
3. Kootenoi to Libby Dom
4. Kootenoi below Libby Dom
5. Fisher
6. Yaak
7. North Fork Flathead
8. Middle Fork Flathead
9. South Fork Flathead
10. Flathead ot Colombio Falls
11. Stillwater/Whitefish
12. Swan
13. Flathead ot Polson
14. Mission Valley
15. Little Bitterroot
17. Blackfoot
18. Clark Fork above Missoula
19. Bitterroot
20. Clark Fork below Bitterroot
21. Clark Fork below Flathead
22. Beaverhead
23. Ruby
24. Big Hole
25. Boulder (Jefferson)
26. Jefferson
27. Madison
28. Colletin
29. Missouri above Conyon F.
30. Missouri below Conyon F.
31. Smith
32. Sun
33. Teton
35. Morios
36. Musselshell
37. Missouri above Ft Peck
38. Missouri below Ft Peck
39. Milk
41. Yellowstone above Livingston
42. Shields
43. Boulder (Yellowstone)
44. Stillwater
45. Rock/Red Lodge
46. Clork's Fork
47. Yellowstone above Bighorn
48. Bighorn below Bighorn Loke
49. Little Bighorn
50. Yellowstone below Bighorn
51. Tongue
52. Powder

CURRENT AS OF
MAY 1, 1997

Note:
Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.

0 25 50 75 STATUTE MILES
0 50 100 KILOMETERS
Albers Equal Area Projection

SWSI VALUES

- Extremely Dry (−4.0 to −3.0)
- Moderately Dry (−2.9 to −2.0)
- Slightly Dry (−1.9 to −1.0)
- Near Average (−.9 to .9)
- Slightly Wet (1.0 to 1.9)
- Moderately Wet (2.0 to 2.9)
- Extremely Wet (3.0 to 4.0)
- SWSI Not Applicable

NRCS STATE OFFICE, BOZEMAN, MT. GRASS/MAPGEN 4.1/swsi.497.bw

MAY 1997

Montana Water Supply Outlook Report as of May 1, 1997

Once again, April did not want to warm up and quit snowing! Several cold fronts moved across Montana increasing snow water in all the mountainous areas. Air temperatures have been below average and have delayed spring runoff. Normally mountain snowpacks have peaked and are beginning to melt by this time of year. However, this year is very similar to last year where snowpacks are still gaining in some areas.

Snowpack

As of May 1, mountain snow water content for Montana was 60 percent above average and 40 percent above last year. West of the Continental Divide, snow water content was 66 percent above average and 55 percent above last year. East of the Continental Divide, snow water content was 49 percent above average and 24 percent above last year.

Several storms added substantial snow water to many regions across the state during April and the first couple days of May. Several snow data stations continue to set new record high snow water contents. This year there is significant snow water at all elevations. Last year we did not have snow in the low to mid elevations. If there are large rains or hot temperatures, the very high snow water content will produce extremely high streamflow peaks. Because there is a lot of snow in all the Montana river basins, there could potentially be very high streamflow peaks and long duration flows in any or all of the major river basins. In most areas the soils are saturated, the snowpack is ready to melt, and high water could begin at any time.

Many snow melt peak flows are forecast to be later than normal by two or three weeks. The snow melt peaks will depend upon the amount of rain and temperatures. It is very difficult at this time to predict exactly when the streamflow peaks will occur, but we do know that there is a very large amount of snow in the mountains and it will eventually melt. Anyone that can potentially be impacted by high water needs to plan ahead. It will be to their advantage to be prepared in advance rather than during an emergency when resources could be stretched thin.

RIVER BASIN	% OF AVERAGE	% OF LAST YEAR
COLUMBIA	166	155
KOOTENAI	163	170
FLATHEAD	168	151
UPPER CLARK FORK	156	136
BITTERROOT	183	155
LOWER CLARK FORK	171	172
MISSOURI	153	134
MISSOURI HEADWATERS	156	129
JEFFERSON	156	125
MADISON	155	124
GALLATIN	150	133
MISSOURI MAINSTEM	147	144
HEADWATERS MAINSTEM	128	128
SMITH-JUDITH-MUSSELSHELL	146	156
SUN-TETON-MARIAS	149	139
ST. MARY	139	162
YELLOWSTONE (MONTANA & WYOMING)	146	115
UPPER YELLOWSTONE	158	118
LOWER YELLOWSTONE (WYOMING)	136	110
WIND	153	122
SHOSHONE	153	102
BIGHORN	135	102
TONGUE	115	103
POWDER	123	104

Precipitation

The combined mountain and valley April precipitation across the state was 12 percent above average and 9 percent below last year, with water year precipitation 38 percent above average and 8 percent above last year.

West of the Continental Divide, combined mountain and valley April precipitation was 13 percent above average and 26 percent below last year and water year precipitation was 42 percent above average and 4 percent above last year. East of the Continental Divide, combined mountain and valley April precipitation was 12 percent above average and 9 percent below last year and water year precipitation was 38 percent above average and 8 percent above last year.

RIVER BASIN	APRIL % OF AVERAGE	WATER YEAR % OF AVERAGE
COLUMBIA	113	142
KOOTENAI	106	141
FLATHEAD	98	145
UPPER CLARK FORK	116	136
BITTERROOT	140	151
LOWER CLARK FORK	138	142
MISSOURI	112	131
JEFFERSON	130	135
MADISON	112	143
GALLATIN	108	141
MISSOURI MAINSTEM	95	111
SMITH-JUDITH-MUSSELSHELL	124	126
SUN-TETON-MARIAS	101	125
MILK	72	89
ST. MARY	66	131
YELLOWSTONE	119	135
UPPER YELLOWSTONE	117	146
LOWER YELLOWSTONE	123	126
WIND	138	130
SHOSHONE	126	150
BIGHORN	108	111
TONGUE	117	115
POWDER	101	106

Reservoirs

Major reservoir storage across the state was 12 percent below average and 15 percent below last year. These numbers are lower than average due to many reservoirs being drawn down to make room the well above average inflows expected from this years well above average snow water content.

West of the Continental Divide, reservoir storage was 17 percent below average and 18 percent below last year. East of the Continental Divide, reservoir storage was 6 percent below average and 12 percent below last year.

RIVER BASIN	% OF CAPACITY	% OF AVERAGE
COLUMBIA	83	82
KOOTENAI	78	81
FLATHEAD	82	81
UPPER CLARK FORK	94	80
BITTERROOT	83	60
LOWER CLARK FORK	157	101
MISSOURI	96	88
JEFFERSON	90	85
MADISON	96	90

Reservoirs (continued)

RIVER BASIN	% OF CAPACITY	% OF AVERAGE
GALLATIN	112	95
MISSOURI MAINSTEM	82	85
SMITH-JUDITH-MUSSELSHELL	116	91
SUN-TETON-MARIAS	121	90
MILK	120	98
ST. MARY	156	84
ST. MARY AND MILK	113	95
YELLOWSTONE	88	91
UPPER YELLOWSTONE	108	107
LOWER YELLOWSTONE	87	90

Streamflow

Streamflow forecasts, for the period May through July, across Montana were 40 percent above average and 24 percent above last years forecasts.

West of the Continental Divide streamflows, for the period May through July, are forecast to be 45 percent above average and 25 percent above last years forecasts. East of the Continental Divide, May through July streamflows, for the period May through July, are forecast to be 38 percent above average and 24 percent above last years forecasts.

Streams west of the Divide should reach their snowmelt peak flows during the second week in May to the third week in June and streams east of the Divide should reach their peak snowmelt flows during the last week in May to the third week in June.

RIVER BASIN	FORECASTS % OF AVERAGE	FORECASTS % OF LAST YEAR
COLUMBIA	145	125
KOOTENAI	122	104
FLATHEAD	146	121
UPPER CLARK FORK	151	142
BITTERROOT	155	124
LOWER CLARK FORK	150	133
MISSOURI	147	133
JEFFERSON	151	130
MADISON	150	129
GALLATIN	137	136
MISSOURI MAINSTEM	168	134
SMITH-JUDITH-MUSSELSHELL	146	133
SUN-TETON-MARIAS	142	122
MILK	123	121
ST. MARY	126	116
ST. MARY AND MILK	124	118
YELLOWSTONE	158	124
UPPER YELLOWSTONE	158	126
LOWER YELLOWSTONE	159	123

NOTE: The FORECAST AS % OF LAST YEAR column above, is this years forecast as a percent of last years forecast, not of what actually occurred.

Peak Streamflow Forecasts

SNOWMELT PEAK STREAMFLOW FORECASTS

WATERSHED	SNOWMELT PEAK FLOW DATES
COLUMBIA RIVER	
Fisher and Yaak Rivers	Second or third week of May
Flathead Rivers	First or second week of June
Lower Willow and Nevada CK. Res. inflow	Late May or early June
Swan River	Second to third week of June
Blackfoot River	First week of June
Clark Fork above Missoula	First or second week of June
Clark Fork below Missoula	Second or third week of June
Bitterroot River near Darby	Second or third week of June
Middle Fork Rock Creek	Second week of June
MISSOURI RIVER	
Clark Canyon Res. inflow	First week of June
Ruby Res. inflow	First or second week in June
Big Hole near Melrose	Last week of May or first week in June
Hebgen Res. inflow	First or second week in June
Gallatin River	Second or third week in June
Missouri at Toston	Second or third week in June
Sheep Creek near White Sulphur Springs	Last week in May or first week of June
Smith River near Eagle Creek	Second or third week in June
Gibson and Swift Res. inflows	First week in June
YELLOWSTONE RIVER	
All forecast stations	Second or third week of June.

	PEAK RANGE IN DAILY CFS	PEAK RANGE AS PERCENT OF AVERAGE	AVERAGE DAILY PEAK IN CFS
COLUMBIA RIVER			
Blackfoot near Bonner	12,000 to 16,000	125 to 167	9,588
Clark Fork above Missoula	21,000 to 30,000	125 to 179	16,738
Bitterroot near Darby	7,000 to 10,000	112 to 160	6,229
Clark Fork below Missoula	40,300 to 51,000	126 to 178	31,992
Clark Fork at St. Regis	52,000 to 70,000	130 to 175	39,984
North Fork Flathead near Columbia Falls	23,000 to 30,100	108 to 142	21,189
Middle Fork Flathead near West Glacier	22,000 to 28,000	98 to 125	22,463
MISSOURI RIVER			
Big Hole near Melrose	9,600 to 13,000	120 to 162	8,015
Ruby above Ruby Reservoir	980 to 1,420	94 to 137	1,037
Gallatin near Gateway	6,700 to 8,100	124 to 150	5,389
Gallatin near Logan	7,000 to 9,000	125 to 161	5,581
Missouri at Toston	27,000 to 34,500	142 to 181	19,042
S. Fk. Musselshell above Martinsdale	800 to 1,300	62 to 106	1,229

	PEAK RANGE IN DAILY CFS	PEAK RANGE AS PERCENT OF AVERAGE	AVERAGE DAILY PEAK IN CFS
YELLOWSTONE RIVER			
Yellowstone at Corwin Springs	25,000 to 30,900	143 to 176	17,532
Yellowstone at Livingston	28,500 to 35,000	135 to 169	20,732
Boulder near Big Timber	6,300 to 8,900	121 to 170	5,226
Stillwater near Absarokee	8,000 to 11,000	121 to 167	6,601
Clarks Fork near Belfry	9,200 to 13,000	119 to 169	7,706
Yellowstone at Billings	58,000 to 74,000	136 to 173	42,716

NOTE: The low number in the peak range represents the maximum daily flow that would be expected to occur with little rainfall during the peak snowmelt period. The high number in the peak range could be expected with moderate amounts of rain about the same time as maximum snowmelt runoff is occurring.

Surface Water Supply Index

The Surface Water Supply Index (SWSI) is an indicator of surface water supply conditions for the spring and summer months. Water users that rely on mountain precipitation can use the indes to evaluate seasonal surface water supplies. The SWSI accounts for mountain snowpack, mountain precipitation, streamflow, reservoir storage, and soil moisture.

SWSI RATING	SURFACE WATER CONDITION
+3.0 to +4.0	Extremely Wet
+2.0 to +3.0	Moderately Wet
+1.0 to +2.0	Slightly Wet
-1.0 to +1.0	Near Average
-1.0 to -2.0	Slightly Dry
-2.0 to -3.0	Moderately Dry
-3.0 to -4.0	Extremely Dry

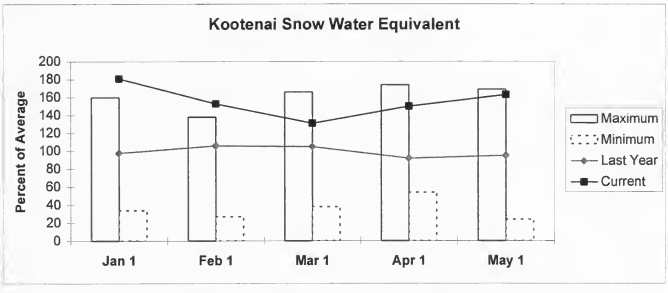
SWSI	Basin
+1.7	Kootenai River at Ft. Steele (Kootenai in Canada)
+3.6	Tobacco River
+2.9	Kootenai Ft. Steele to Libby Dam
+2.6	Kootenai River below Libby Dam
+3.6	Fisher River
+3.3	Yaak River
+3.8	North Fork Flathead River
+3.4	Middle FORK Flathead River
+3.8	South Fork Flathead River
+3.7	Flathead River at Columbia Falls
+3.6	Stillwater/Whitefish Rivers
+3.9	Swan River
+3.7	Flathead River at Polson
+3.9	Mission Valley
+3.4	Little Bitterroot River
+2.9	Clark Fork River above Rock Creek
+3.5	Blackfoot River
+3.2	Clark Fork River above Missoula
+3.8	Bitterroot River
+3.4	Clark Fork River below Bitterroot River

Surface Water Supply Index (continued)

SWSI	Basin
+3.6	Clark Fork River below Flathead River
+3.1	Beaverhead River
+3.0	Ruby River
+3.9	Big Hole River
+2.9	Boulder River (Jefferson)
+3.6	Jefferson River
+4.0	Madison River
+3.7	Gallatin River
+3.8	Missouri River above Canyon Ferry
+3.8	Missouri River below Canyon Ferry
+3.3	Smith River
+3.1	Sun River
+3.1	Teton River
+3.1	Birch/Dupuyer Creeks
+3.0	Marias River
+3.2	Musselshell River
+3.5	Missouri River above Ft. Peck
+3.4	Missouri River below Ft. Peck
+3.2	Milk River
+3.9	Yellowstone River above Livingston
+4.0	Shields River
+3.9	Boulder River (Yellowstone)
+3.4	Stillwater River
+3.5	Rock/Red Lodge Creeks
+4.0	Clarks Fork River
+3.8	Yellowstone River above Bighorn River
+3.1	Bighorn River below Bighorn Lake
+1.6	Little Bighorn River
+3.5	Yellowstone River below Bighorn River
+1.8	Tongue River
+1.9	Powder River

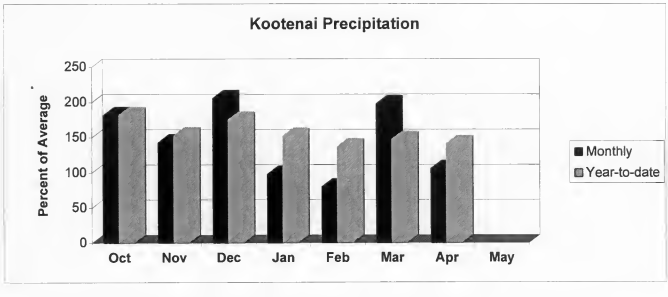
Kootenai River Basin in Montana

Snowpack conditions in the Kootenai River Basin of Montana were well above average and third highest for the period 1961 to 1996. In Canada snowpack conditions were above average. Snow water content for the Kootenai in Montana was 63 percent above average and 70 percent above last year. Water content for the East Kootenai in Canada was 29 percent above average and 7 percent above last year.



January maximum swe was established in 1985 and minimum was in 1977; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1974 and minimum swe was in 1977; May maximum swe was in 1974 and minimum swe was in 1977; and June maximum swe was in 1974 and minimum swe was in 1992. Average is for the period 1961 through 1990.

Mountain precipitation during April was 8 percent above average and 18 percent below last year. Valley precipitation during April was 21 percent below average and 37 percent below last year. Water year precipitation, beginning October 1, 1996, was 41 percent above average and 5 percent above last year.



Lake Koocanusa storage, on the last day of April, was 22 percent below average and 19 percent below last year.

Streamflows, for the period May through July, are forecast to be 22 percent above average and 4 percent above last years forecasts.

The Fisher River near Libby is forecast to reach peak flows between May 22 and May 25, with daily peak flows ranging from 3,200 cfs to 4,500 cfs. The Yaak near Troy is forecast to reach peak flows between May 14 and May 24, with daily peak flows ranging from 7,600 cfs to 11,000 cfs.

Surface Water Supply Index (SWSI) was +1.7 in the Kootenai River at Ft. Steele (Kootenai in Canada); +3.6 in the Tobacco River; +2.9 in the Kootenai Ft. Steele to Libby Dam; +2.6 in the Kootenai River below Libby Dam; +3.6 in the Fisher River; and +3.3 in the Yaak River.

KOOTENAI RIVER BASIN in Montana
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
TOBACCO RIVER nr Eureka	MAY-JUL	155	167	175	159	183	195	110
	MAY-SEP	175	190	200	161	210	225	124
LIBBY RES Inflow (1,2)	MAY-JUL	5395	6045	6340	120	6635	7285	5301
	MAY-SEP	6428	7200	7550	120	7900	8672	6294
FISHER RIVER near Libby	MAY-JUL	235	250	260	160	270	285	163
	MAY-SEP	258	274	285	159	296	312	179
YAAK RIVER near Troy	MAY-JUL	498	523	540	145	557	582	372
	MAY-SEP	528	553	570	145	587	612	394
KOOTENAI at Leonia (1,2)	MAY-JUL	6356	7150	7510	118	7870	8664	6390
	MAY-SEP	7463	8389	8810	118	9231	10157	7466

KOOTENAI RIVER BASIN in Montana
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
LAKE KOOCANUSA	5748.0	1875.0	2306.0	2409.0

KOOTENAI RIVER BASIN in Montana
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
KOOTENAY in CANADA	24	107	129
KOOTENAI MAINTSTEM	3	164	159
TOBACCO	3	118	147
FISHER	5	219	170
YAAK	6	194	172
KOOTENAI in MONTANA	16	170	163
ab BONNERS FERRY	40	132	144

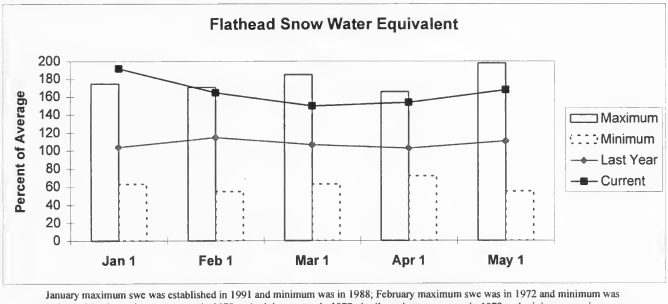
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

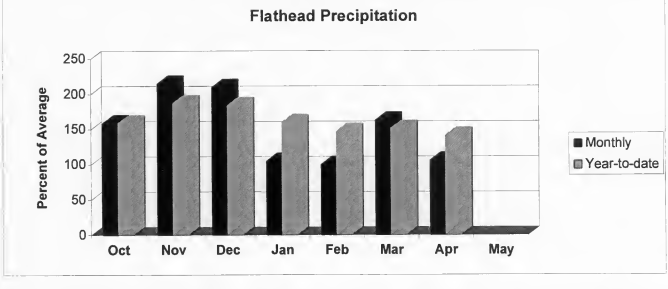
Flathead River Basin

Snowpack condition in the Flathead River Basin of Montana were well above average and fourth highest for the period 1961 to 1996. In Canada snowpack was well above average. Snow water content for the Flathead in Montana was 68 percent above average and 51 percent above last year. Snow water content for the Flathead in Canada was 52 percent above average and 54 percent above last year.



January maximum swe was established in 1991 and minimum was in 1988; February maximum swe was in 1972 and minimum was in 1977; March maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1972 and minimum was in 1992; May maximum swe was in 1972 and minimum was in 1992; and June maximum swe was in 1974 and minimum was in 1992. Average is for the period 1961 through 1990.

Mountain precipitation during April was at average and 29 percent below last year. Valley precipitation during April was 26 percent below average and 32 percent below last year. Water year precipitation, beginning October 1, 1996, was 45 percent above average and 6 percent above last year.



Reservoir storage on the last day of April was 18 percent below average and 19 percent below last year. Combined Camas reservoir storage was 64 percent above average and 35 percent above last year; the combined Mission Valley reservoir storage was 28 percent below average and 28 percent above last year; Hungry Horse storage was 34 percent below average and 26 percent below last year (this is drawn down for maintenance work); and Flathead Lake storage was 15 percent above average and 12 percent below last year.

Streamflows, for the period May through July, are forecast to be 46 percent above average and 21 percent above last years forecasts.

The North Fork Flathead near Columbia Falls is forecast to reach peak flows between June 4 to June 13 with daily peak flows ranging from 24,000 cfs to 31,500 cfs or 13 percent to 49 percent above average; the Middle Fork Flathead near West Glacier is forecast to reach peak flows between May 28 and June 8 with daily peak flows ranging from 24,500 cfs to 31,000 cfs or 9 percent to 38 percent above average; inflow to Hungry Horse Reservoir is forecast to reach peak flows between May 28 and June 10 with daily peak flows ranging from 34,000 to 31,000; and the Swan near Big Fork is forecast to reach peak flows between June 5 and June 18 with daily peak flows ranging from 1,800 cfs to 9,000 cfs.

Surface Water Supply Index (SWSI) was +3.8 for the North Fork Flathead River; +3.4 for the Middle Fork Flathead River; +3.8 for the South Fork Flathead River; +3.7 for the Flathead River at Columbia Falls; +3.6 for the Stillwater/Whitefish Rivers; +3.9 for the Swan River; +3.7 for the Flathead River at Polson; +3.9 for the Mission Valley; and +3.4 for the Little Bitterroot River.

FLATHEAD RIVER BASIN

Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
NF FLATHEAD nr Columbia Falls	MAY-JUL	1937	2010	2060	140	2110	2183	1474
	MAY-SEP	2167	2252	2310	140	2368	2453	1648
MF FLATHEAD nr West Glacier	MAY-JUL	1922	2016	2080	143	2144	2238	1454
	MAY-SEP	2106	2216	2290	143	2364	2474	1604
HUNGRY HORSE Reservoir Inflow (1,2)	MAY-JUL	2513	2621	2670	150	2719	2827	1777
	MAY-SEP	2686	2806	2860	150	2914	3034	1911
FLATHEAD at Columbia Falls (2)	MAY-JUL	6338	6649	6860	142	7071	7382	4816
	MAY-SEP	6908	7266	7510	142	7754	8112	5294
STILLWATER nr Whitefish	MAY-JUL	219	238	250	161	262	281	155
	MAY-SEP	238	260	275	158	290	312	174
WHITEFISH nr Kalispell	MAY-JUL	123	131	137	149	143	152	92
	MAY-SEP	139	149	156	149	163	173	105
SWAN RIVER near Bigfork	MAY-JUL	686	715	735	150	755	784	491
	MAY-SEP	794	830	854	149	878	914	574
FLATHEAD Lake Inflow (1,2)	MAY-JUL	7529	8039	8270	148	8501	9011	5578
	MAY-SEP	8120	8760	9050	148	9340	9980	6114

FLATHEAD RIVER BASIN

Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CAMAS (4)	45.2	46.6	34.4	28.5
MISSION VALLEY (8)	100.0	35.6	49.2	49.7
HUNGRY HORSE	3451.0	1341.0	1803.0	2043.0
FLATHEAD LAKE	1791.0	1082.0	1224.0	937.2

FLATHEAD RIVER BASIN

Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
NF FLATHEAD in CANADA	4	154	152
NF FLATHEAD in MT.	8	126	149
MIDDLE FORK FLATHEAD	5	134	147
SOUTH FORK FLATHEAD	7	173	176
STILLWATER-WHITEFISH	10	151	170
SWAN	8	147	163
MISSION VALLEY	5	157	177
LITTLE BITTERROOT-ASHLEY	6	389	310
JOCKO	5	139	168
FLATHEAD in MONTANA	39	151	168
FLATHEAD BASIN	43	151	167

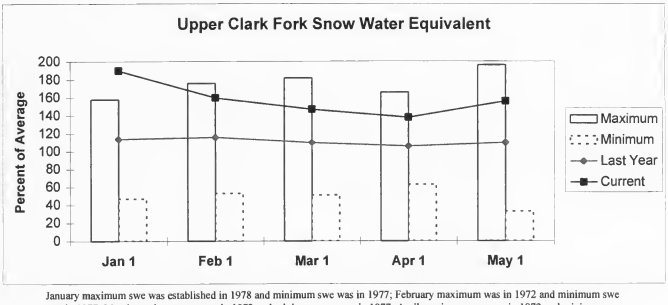
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

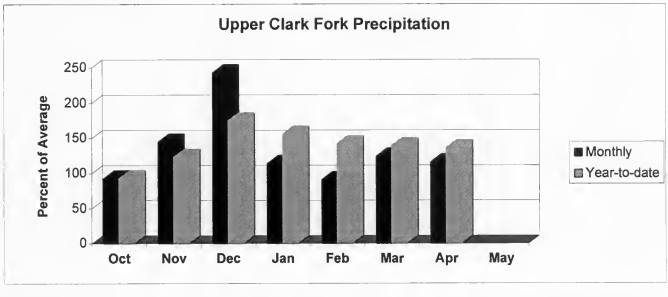
Upper Clark Fork River Basin

Snowpack conditions in the Upper Clark Fork River Basin were well above average and fourth highest for the period 1961 to 1996. Snow water content was 56 percent above average and 36 percent above last year.



January maximum swe was established in 1978 and minimum swe was in 1977; February maximum was in 1972 and minimum swe was in 1977; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum was in 1994; May maximum swe was in 1972 and minimum swe was in 1977; and June maximum swe was in 1975 and minimum swe was in 1987. Average is for the period 1961 through 1990.

Mountain precipitation during April was 21 percent above average and 8 percent below last year. Valley precipitation during April was 23 percent below average and 57 percent below last year. Water year precipitation, beginning October 1, 1996, was 36 percent above average and 6 percent above last year.



Reservoir storage on the last day of April was 6 percent below average and 20 percent below last year. Georgetown Lake storage was 4 percent above average and 9 percent below last year; Lower Willow Creek storage was 12 percent below average and 36 percent below last year; and Nevada Creek storage was 27 percent below average and 40 percent below last year.

Streamflows, for the period May through July, are forecast to be 51 percent above average and 42 percent above last years forecasts.

The Blackfoot near Bonner is forecast to reach peak flows between June 4 and June 5 with daily peak flows ranging from 13,000 cfs to 17,000 cfs or 35 percent to 77 percent above average; the Clark Fork above Missoula is forecast to reach peak flows between June 4 and June 11 with daily peak flows ranging from 23,500 cfs to 32,500 cfs or 40 percent to 94 percent above average; inflow into Lower Willow Creek Reservoir is forecast to reach peak flows the last week in May or first week in June; Nevada Creek near Finn is forecast to reach peak flows during the first week in June with daily peak flows ranging from 260 cfs to 480 cfs; and Middle Fork Rock Creek near Phillipsburg is forecast to reach peak flows during the second or third week of June with daily peak flows ranging from 1,000 cfs to 1,420 cfs.

Surface Water Supply Index (SWSI) was +2.9 for the Clark Fork River above Rock Creek; +3.5 for the Blackfoot River; and +3.2 for the Clark Fork River above Missoula.

UPPER CLARK FORK RIVER BASIN
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<<<<<< Drier ====== Future Conditions ======= Wetter =====>>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
WARM SPRINGS CK at Anaconda (2)	MAY-JUL	35	41	45	125	49	55	36
	MAY-SEP	44	51	55	125	59	66	44
LITTLE BLACKFOOT nr Garrison	MAY-JUL	45	69	85	123	101	125	69
	MAY-SEP	52	78	95	125	112	138	76
FLINT CK nr Southern Cross (2)	MAY-JUL	12.0	15.0	17.0	141	19.0	22	12.1
	MAY-SEP	14.3	18.0	21	140	23	27	14.7
FLINT CK bl Boulder Ck	MAY-JUL	51	61	68	136	75	85	50
	MAY-SEP	70	82	90	136	98	111	66
LOWER WILLOW CK RES Inflow	MAY-JUL	11.1	13.7	15.5	136	17.3	19.9	11.4
	MAY-SEP	11.9	14.6	16.5	134	18.4	21	12.3
MF ROCK CREEK nr Philipsburg	MAY-JUL	71	80	86	139	92	101	62
	MAY-SEP	80	89	96	139	103	113	69
ROCK CREEK near Clinton	MAY-JUL	318	358	385	146	412	452	264
	MAY-SEP	357	401	430	143	459	503	300
NEVADA CK nr Finn	MAY-JUL	12.9	16.5	19.0	125	22	25	15.2
	MAY-SEP	14.6	18.4	21	124	24	27	16.9
CLEARWATER nr Clearwater	MAY-JUL	188	201	210	158	219	232	133
	MAY-SEP	196	213	225	159	237	254	142
BLACKFOOT RIVER near Bonner	MAY-JUL	1100	1160	1200	168	1240	1300	714
	MAY-SEP	1242	1306	1350	168	1394	1458	805
CLARK FORK ab Milltown	MAY-JUL	693	804	880	160	956	1067	549
	MAY-SEP	846	967	1050	161	1133	1254	652
CLARK FORK ab Missoula	MAY-JUL	1801	1967	2080	165	2193	2359	1263
	MAY-SEP	2093	2270	2390	164	2510	2687	1457

UPPER CLARK FORK RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
GEORGETOWN LAKE	31.0	25.9	28.5	24.9
LOWER WILLOW CREEK	4.9	2.9	4.5	3.3
NEVADA CREEK	12.6	7.4	12.3	10.2

UPPER CLARK FORK RIVER BASIN
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CLARK FORK ab FLINT CRK	13	135	151
FLINT CREEK	5	148	161
ROCK CREEK	4	140	159
CLARK FORK ab BLACKFOOT	20	139	158
BLACKFOOT	16	132	158
UPPER CLARK FORK BASIN	33	137	155

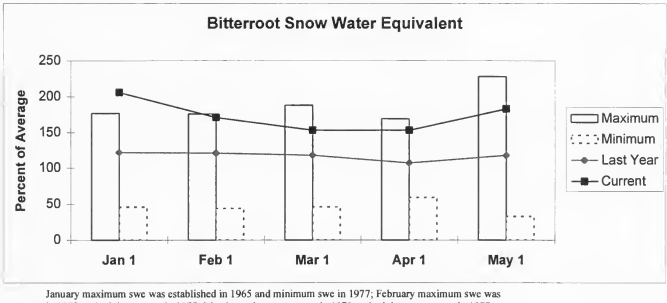
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

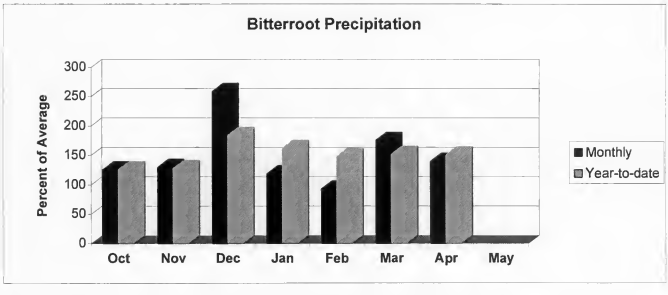
Bitterroot River Basin

Snowpack conditions in the Bitterroot River Basin were well above average and third highest for the period 1961 to 1996. Snow water content was 83 percent above average and 55 percent above last year.



January maximum swe was established in 1965 and minimum swe in 1977; February maximum swe was in 1972 and minimum was in 1977; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum swe was in 1977; May maximum swe was in 1972 and minimum swe was in 1987; and June maximum swe was 1972 and 1974 and minimum swe was in 1987 and 1992. Average is for the period 1961 through 1990.

Mountain precipitation during April was 33 percent above average and 27 percent below last year. Valley precipitation during April was 82 percent above average and 25 percent above last year. Water year precipitation, beginning October 1, 1996, was 51 percent above average and 1 percent above last year.



Reservoir storage, on the last day of April, was 17 percent below average and 60 percent below last year. Painted Rocks Lake storage was 42 percent below average and 60 percent below last year and Como storage was 7 percent above average and 18 percent below last year.

Streamflows, for the period May through July, are forecast to be 55 percent above average and 24 percent above last years forecasts.

The Bitterroot near Darby is forecast to reach peak flows between May 27 to June 12 with daily peak flows ranging from 7,600 cfs to 10,200 cfs or 22 percent to 64 percent above average.

Surface Water Supply Index (SWSI) was +3.8 for the Bitterroot River.

BITTERROOT RIVER BASIN

Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== 90% (1000AF)	70% (1000AF)	Future Conditions ======= Wetter ======>> 50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
WF BITTERROOT nr Conner (2)	MAY-JUL	181	198	210	157	222	239	134
	MAY-SEP	199	218	230	155	242	261	148
BITTERROOT nr Darby	MAY-JUL	595	648	685	158	722	775	435
	MAY-SEP	670	724	760	157	796	850	484
ROCK CK nr Darby (2)	MAY-JUL	95	101	105	152	109	115	69
	MAY-SEP	100	106	110	151	114	121	73
SKALKAHO CK nr Hamilton	MAY-JUL	58	63	66	154	69	74	43
	MAY-SEP	66	71	75	150	79	84	50
BURNT FORK CK nr Stevensville (2)	MAY-JUL	35	39	42	156	45	49	27
	MAY-SEP	42	47	50	156	53	58	32
BITTERROOT at Missoula	MAY-JUL	1580	1693	1770	154	1847	1960	1149
	MAY-SEP	1759	1879	1960	155	2041	2161	1266

BITTERROOT RIVER BASIN

Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
PAINTED ROCKS LAKE	31.7	11.6	29.3	20.0
COMO	34.9	21.7	26.6	20.2

BITTERROOT RIVER BASIN

Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WEST FORK BITTERROOT	3	123	163
EAST SIDE BITTERROOT	5	135	179
WEST SIDE BITTERROOT	3	185	189
BITTERROOT BASIN	10	155	183

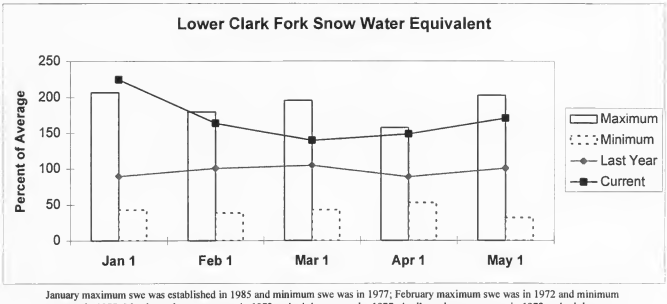
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

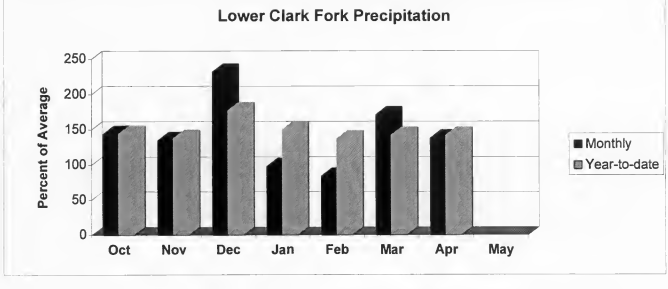
Lower Clark Fork River Basin

Snowpack conditions in the Lower Clark Fork River Basin were well above average and third highest for the period 1961 to 1996. Snow water content was 71 percent above average and 72 percent above last year.



January maximum swe was established in 1985 and minimum swe was in 1977; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1972 and minimum swe was in 1981; May maximum swe was in 1972 and minimum swe was in 1977; and June maximum swe was in 1974 and minimum swe was in 1977. Average is for the period 1961 through 1990.

Mountain precipitation during April was 30 percent above average and 25 percent below last year. Valley precipitation during April was 65 percent above average and 24 percent below last year. Water year precipitation, beginning October 1, 1996, was 42 percent above average and 3 percent below last year.



Noxon Rapids storage, on the last day of April, was 57 percent above average and 1 percent above last year.

Streamflows, for the period May through July, are forecast to be 50 percent above average and 33 percent above last year.

The Clark Fork below Missoula is forecast to reach peak flows between June 2 and June 19 with daily peak flows ranging from 43,000 cfs to 56,000 cfs or 34 percent to 75 percent above average and the Clark Fork at St. Regis is forecast to have daily peak flows ranging from 52,000 cfs to 70,000 cfs or 30 percent to 75 percent above average.

Surface Water Supply Index (SWSI) was +3.4 for the Clark Fork River below Bitterroot River and +3.6 for the Clark Fork River below Flathead River.

LOWER CLARK FORK RIVER BASIN
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<<<<<< Drier ====== Future Conditions ======= Wetter =======>>> Chance Of Exceeding * ======================== 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CLARK FORK ab Missoula	MAY-JUL	1801	1967	2080	165	2193	2359	1263
	MAY-SEP	2093	2270	2390	164	2510	2687	1457
CLARK FORK bl Missoula	MAY-JUL	3429	3692	3870	160	4048	4311	2413
	MAY-SEP	3892	4171	4360	160	4549	4828	2724
CLARK FORK at St. Regis (1)	MAY-JUL	4317	4801	5020	159	5239	5723	3152
	MAY-SEP	4868	5412	5660	159	5908	6452	3561
CLARK FORK nr Plains (1,2)	MAY-JUL	11879	12925	13400	148	13875	14921	9052
	MAY-SEP	13208	14372	14900	148	15428	16592	10080
THOMPSON RIVER nr Thompson Falls	MAY-JUL	189	210	225	133	240	261	169
	MAY-SEP	215	239	255	130	271	295	196
PROSPECT CREEK at Thompson Falls	MAY-JUL	108	117	123	131	129	138	94
	MAY-SEP	117	127	133	129	139	149	103
CLARK FK at Whitehorse Rpds (1,2)	MAY-JUL	12788	14034	14600	146	15166	16412	10020
	MAY-SEP	14277	15668	16300	146	16932	18323	11200

LOWER CLARK FORK RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
NOXON RAPIDS	335.0	326.8	324.3	208.7

LOWER CLARK FORK RIVER BASIN
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of ========== Last Yr	Average
LOWER CLARK FORK	11	172	171
CLARK FORK BASIN	43	151	160
CLARK FK ab PEND ORIELLE	88	152	165
COLUMBIA in MONTANA	92	155	166
COLUMBIA RIVER BASIN	119	144	158

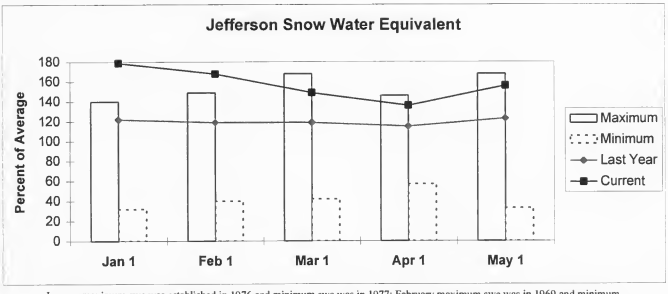
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

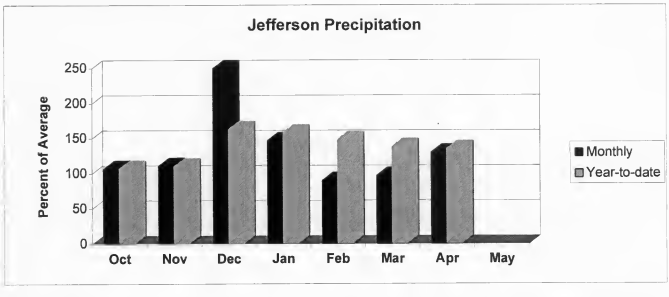
Jefferson River Basin

Snowpack conditions in the Jefferson River Basin were well above average and fourth highest for the period 1961 to 1996. Snow water content was 56 percent above average and 25 percent above last year.



January maximum swe was established in 1976 and minimum swe was in 1977; February maximum swe was in 1969 and minimum was in 1977; March maximum swe was in 1972 and minimum was in 1977; April maximum swe was in 1972 and minimum was in 1977; May maximum swe was in 1975 and minimum swe was in 1977; and June maximum swe was in 1982 and minimum in 1987. Average is for the period 1961 through 1990.

Mountain precipitation during April was 31 percent above average and 10 percent above last year. Valley precipitation during April was 21 percent above average and 17 percent below last year. Water year precipitation, beginning October 1, 1996, was 35 percent above average and 12 percent above last year.



Reservoir storage, on the last day of April, was 10 percent below average and 15 percent below last year. Lima storage was 15 percent below average and 37 percent below last year; Clark Canyon storage was 7 percent below average and 5 percent below last year; and Ruby River storage was 17 percent below average and 12 percent below last year.

Streamflows, for the period May through July, are forecast to be 51 percent above average and 30 percent above last year.

The Big Hole near Melrose is forecast to reach peak flows from May 29 to June 3 with daily peak flows ranging from 9,600 cfs to 13,000 cfs or 20 percent to 62 percent above average; the Ruby River above Ruby Reservoir is forecast to reach peak flows between June 2 and June 10 with daily peak flows ranging from 980 cfs to 1,420 cfs or 6 percent below average to 37 percent above average; the Missouri at Toston is forecast to reach peak flows between June 1 and June 17 with daily peak flow ranging from 27,000 cfs to 34,500 cfs or 42 percent to 81 percent above average; and inflow into Clark Canyon Reservoir is forecast to reach peak flows between June 1 and June 4 with daily peak flows ranging from 1,300 cfs to 2,200 cfs.

Surface Water Supply Index (SWSI) was +3.6 for the Jefferson River; +3.1 for the Beaverhead River; +3.0 for the Ruby River; +3.9 for the Big Hole River; and +2.9 for the Boulder River.

JEFFERSON RIVER BASIN
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
RED ROCK RIVER near Monida (2)	MAY-JUL	81	95	105	146	115	129	72
	MAY-SEP	87	104	115	144	127	144	80
BEAVERHEAD RIVER near Grant (2)	MAY-JUL	84	114	135	147	156	186	92
	MAY-SEP	98	141	170	148	199	242	115
BEAVERHEAD RIVER at Barretts (2)	MAY-JUL	131	157	175	141	193	219	124
	MAY-SEP	165	195	215	139	235	265	155
RUBY RIVER near Alder	MAY-JUL	71	85	95	130	105	119	73
	MAY-SEP	85	102	114	128	126	143	89
BIG HOLE RIVER near Melrose	MAY-JUL	689	785	850	153	915	1011	555
	MAY-SEP	763	865	935	153	1005	1107	612
BOULDER RIVER near Boulder	MAY-JUL	76	90	100	133	110	124	75
	MAY-SEP	84	99	110	136	121	137	81
WILLOW CREEK near Harrison	MAY-JUL	15.3	20	24	156	27	32	15.1
	MAY-SEP	16.6	23	27	155	31	37	17.4
JEFFERSON RIVER near Three Forks (2)	MAY-JUL	877	1054	1175	157	1296	1473	749
	MAY-SEP	998	1193	1325	158	1457	1652	841

JEFFERSON RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
LIMA	84.0	46.9	74.9	55.1
CLARK CANYON	255.6	151.5	159.0	162.4
RUBY RIVER	38.8	30.2	34.4	36.3

JEFFERSON RIVER BASIN
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
BEAVERHEAD	15	125	153
RUBY	9	117	138
BIGHOLE	14	123	166
BOULDER	7	139	147
JEFFERSON RIVER BASIN	37	125	155

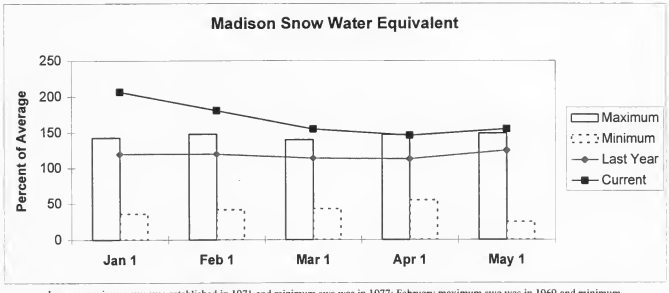
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

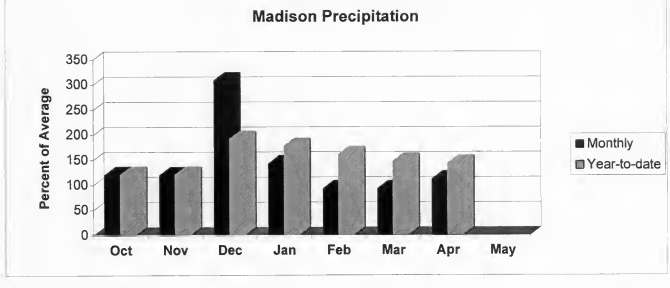
Madison River Basin

Snowpack conditions in the Madison River Basin were well above average and set a new May 1 average previously set in 1971. Snow water content was 55 percent above average and 24 percent above last year.



January maximum swe was established in 1971 and minimum swe was in 1977; February maximum swe was in 1969 and minimum was in 1977; March maximum swe was in 1969 and minimum was in 1977; April maximum swe was in 1974 and minimum was in 1977; May maximum swe was in 1971 and minimum swe was in 1977; and June maximum swe was in 1995 and minimum in 1987. Average is for the period 1961 through 1990.

Mountain and valley precipitation during April was 12 percent above average and 8 percent below last year. Water year precipitation, beginning October 1, 1996, was 43 percent above average and 23 percent above last year.



Reservoir storage, on the last day of April, was 4 percent below average and 10 percent below last year. Ennis Lake storage was 7 percent below average and 12 percent below last year and Hebgen Lake storage was 3 percent below average and 12 percent below last year.

Streamflows, for the period May through July, are forecast to be 50 percent above average and 29 percent above last year.

Inflow into Hebgen Reservoir is forecast to reach peak flows between June 1 and June 11 with daily peak flows ranging from 4,650 cfs to 5,650 cfs.

Surface Water Supply Index (SWSI) was +1.7 for the Madison River.

MADISON RIVER BASIN

Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<======= Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
MADISON RIVER near Grayling (2)	MAY-JUL	428	456	475	148	494	522	321
	MAY-SEP	577	612	635	148	658	693	428
MADISON RIVER near McAllister (2)	MAY-JUL	762	814	850	151	886	938	562
	MAY-SEP	998	1059	1100	151	1141	1202	731

MADISON RIVER BASIN

Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ENNIS LAKE	41.0	32.8	29.2	35.1
HEBGEN LAKE	377.5	237.6	271.5	246.1

MADISON RIVER BASIN

Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
MADISON abv HEBGEN LAKE	6	125	169
MADISON blw HEBGEN LAKE	11	123	146
MADISON RIVER BASIN	17	124	155

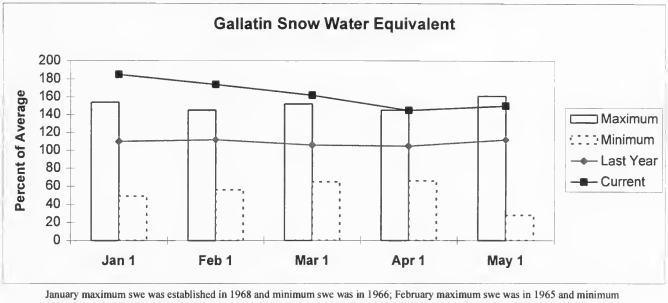
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

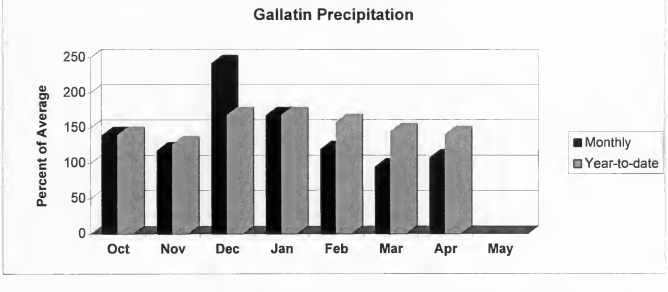
Gallatin River Basin

Snowpack conditions in the Gallatin River Basin were well above average and second highest for the period 1961 to 1996. Snow water content was 50 percent above average and 33 percent above last year.



January maximum swe was established in 1968 and minimum swe was in 1966; February maximum swe was in 1965 and minimum was in 1981; March maximum swe was in 1965 and minimum was in 1977 and 1987; April maximum swe was in 1971 and minimum was in 1987; May maximum swe was in 1970 and minimum swe was in 1987; and June maximum swe was in 1975 and minimum in 1987. Average is for the period 1961 through 1990.

Mountain precipitation during April was 8 percent above average and the same as last year. Valley precipitation during April was 25 percent above average and 39 percent above last year. Water year precipitation, beginning October 1, 1996, was 41 percent above average and 25 percent above last year.



Middle Creek storage, on April 20, was 12 percent above average and 5 percent below last year.

Streamflows, for the period May through July, are forecast to be 37 percent above average and 36 percent above last year.

The Gallatin River near Gateway is forecast to reach peak flows between June 13 and June 19 with daily peak flows ranging from 6,700 cfs to 8,100 cfs or 24 percent to 50 percent above average and the Gallatin River near Logan is forecast to reach peak flows between June 14 and June 20 with daily peak flows ranging from 7,000 cfs to 9,000 cfs or 25 percent to 61 percent above average.

Surface Water Supply Index (SWSI) was +3.7 for the Gallatin River.

GALLATIN RIVER BASIN

Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<<<<<< Drier ====== Future Conditions ======= Wetter =====>>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GALLATIN RIVER near Gateway	MAY-JUL	534	570	595	146	620	656	409
	MAY-SEP	634	673	700	144	727	766	486
E & W FK HYALITE CREEK near Bozeman	MAY-JUL	27	29	30	143	31	33	21
	MAY-SEP	31	34	35	140	37	39	25
HYALITE CREEK near Bozeman (2)	MAY-JUL	40	44	47	142	50	54	33
	MAY-SEP	47	52	55	141	58	63	39
GALLATIN RIVER at Logan (2)	MAY-JUL	555	627	675	157	723	795	429
	MAY-SEP	674	749	800	156	851	926	512

GALLATIN RIVER BASIN

Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
MIDDLE CREEK	10.2	5.4	5.7	4.8

GALLATIN RIVER BASIN

Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
UPPER GALLATIN	7	120	145
HYALITE	3	127	141
BRIDGER	4	169	166
GALLATIN RIVER BASIN	14	133	150
MISSOURI HEADWATERS	61	129	155

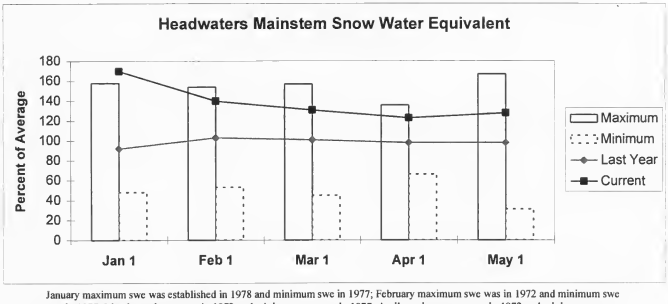
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

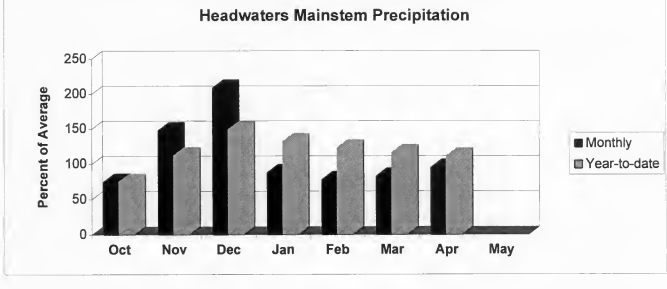
Missouri Mainstem River Basin

Snowpack conditions in the Headwaters Missouri Mainstem were well above average and second highest for the period 1961 to 1996. Snow water content was 47 percent above average and 28 percent above last year.



January maximum swe was established in 1978 and minimum swe in 1977; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum swe was in 1961; May maximum swe was in 1975 and minimum swe was in 1977; and June maximum swe was in 1982 and minimum swe was in 1992. Average is for the period 1961 through 1990.

Mountain precipitation during April was 12 percent above average and 10 percent above last year. Valley precipitation during April was 30 percent below average and 13 percent below last year. Water year precipitation, beginning October 1, 1996, was 11 percent above average and 5 percent above last year.



Reservoir storage, on the last day of April, was 18 percent below average and 15 percent below last year. Canyon Ferry Lake storage was 21 percent below average and 18 percent below last year; Helena Valley storage was 35 percent above average and 4 percent above last year; Lake Helena storage was 8 percent above average and 58 percent above last year; Hauser & Helena storage was 4 percent above average and 23 percent above last year; Holter Lake storage was 9 percent above average and the same as last year; and Fort Peck Lake storage was 8 percent above average and 5 percent below last year.

Streamflows, for the period May through July, are forecast to be 68 percent above average and 34 percent above last year.

Surface Water Supply Index (SWSI) was +3.8 for the Missouri River above Canyon Ferry; +3.8 for the Missouri River below Canyon Ferry; +3.5 for the Missouri River above Ft. Peck; and +3.4 for the Missouri River below Ft. Peck.

MISSOURI MAINSTEM RIVER BASIN
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<<<<<< Drier ====== Future Conditions ======= Wetter =====>>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
MISSOURI RIVER at Toston (2)	MAY-JUL	2028	2437	2715	157	2993	3402	1730
	MAY-SEP	2775	2951	3260	157	3569	3728	2071
PRICKLY PEAR CREEK near Clancy	MAY-JUL	7.4	14.9	20	100	25	33	20
	MAY-SEP	9.6	18.2	24	100	30	38	24
SUN RIVER at Gibson Dam (2)	MAY-JUL	497	558	600	136	642	703	441
	MAY-SEP	555	620	665	136	710	775	489
MISSOURI RIVER at Fort Benton (2)	MAY-JUL	3016	3721	4200	162	4679	5384	2597
	MAY-SEP	4304	4691	5210	163	5729	6089	3188
MARIAS RIVER near Shelby (2)	MAY-JUL	470	536	580	150	624	690	387
	MAY-SEP	521	586	630	147	674	739	428
MISSOURI RIVER at Virgelle (2)	MAY-JUL	3703	4475	5000	165	5525	6297	3030
	MAY-SEP	4930	5468	6060	166	6652	7231	3652
MISSOURI RIVER near Landusky (2)	MAY-JUL	4254	5041	5575	170	6109	6896	3279
	MAY-SEP	5468	6191	6770	171	7349	8082	3962
MISSOURI RIVER below Fort Peck (2)	MAY-JUL	4468	5380	6000	180	6620	7532	3327
	MAY-SEP	5256	6107	6780	179	7453	7902	3781
LAKE SAKAKAWEA Inflow (2)	MAY-JUL	11284	13199	14500	177	15801	17716	8209
	MAY-SEP	14294	15634	16990	176	18346	19799	9658

MISSOURI MAINSTEM RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CANYON FERRY LAKE	2043.0	1183.0	1439.0	1501.0
HELENA VALLEY	9.2	10.1	9.7	7.5
LAKE HELENA	10.4	10.9	6.9	10.1
HAUSER & HELENA	61.9	63.1	51.5	60.4
HOLTER LAKE	81.9	80.6	80.6	73.9
FORT PECK LAKE (MAP)	18.9	16.2	17.1	15.0

MISSOURI MAINSTEM RIVER BASIN
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
MISSOURI MAINSTEM	10	132	143
SMITH-JUDITH-MUSSELSHELL	13	157	147
SUN-TETON-MARIAS	14	144	150
MISSOURI abv FT PECK	36	146	147
MILK RIVER BASIN	6	236	80
MISSOURI MAINSTEM BASIN	41	147	147

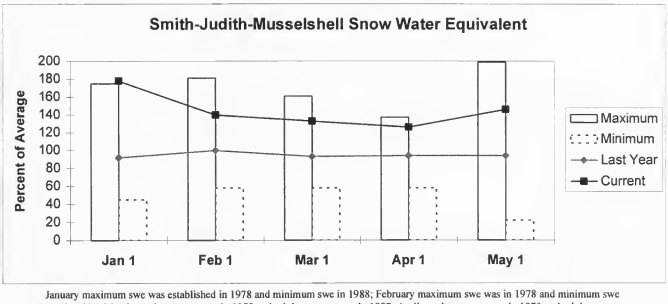
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

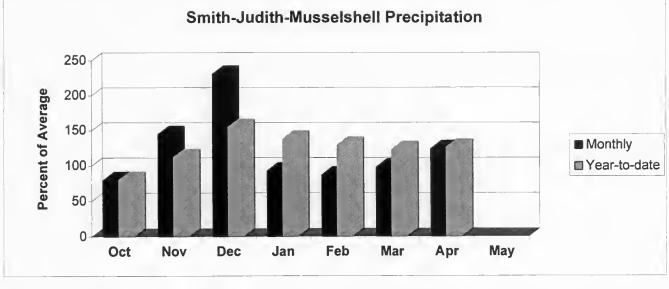
Smith-Judith-Musselshell River Basins

Snowpack conditions in the Smith-Judith-Musselshell River Basins were well above average and fourth highest for the period 1961 to 1996. Snow water content in the Smith River was 49 percent above average and 38 percent above last year; the Judith River was 38 percent above average and 58 percent above last year; and the Musselshell River was 52 percent above average and 68 percent above last year.



January maximum swe was established in 1978 and minimum swe in 1988; February maximum swe was in 1978 and minimum swe was in 1987; March maximum swe was in 1978 and minimum swe was in 1987; April maximum swe was in 1970 and minimum swe was in 1992; and May maximum swe was in 1970 and minimum swe was in 1987; and June maximum swe was in 1982 and minimum swe was in 1992. Average is for the period 1961 through 1990.

Mountain and valley precipitation during April in the Smith River was 15 percent above average and 15 percent above last year; The Judith River was 41 percent above average and 69 percent above last year; and the Musselshell River was 22 percent above average and 26 percent above last year. The basin water year precipitation, beginning October 1, 1996, was 26 percent above average and 13 percent above last year.



Reservoir storage, on the last day of April, was 16 percent above average and 9 percent below last year. Smith River storage was 13 percent above average and 1 percent above last year; Newlan storage WAS NOT REPORTED; Bair storage was 10 percent below average and 4 percent above last year; Martinsdale storage was 21 percent above average and 28 percent below last year; and Deadman's Basin was 19 percent above average and 6 percent below last year.

Streamflows, for the period May through July, are forecast to be 33 percent above average and 46 percent above last year.

Sheep Creek near White Sulphur Springs is forecast to reach peak flows between May 30 and June 3 with daily peak flows ranging from 250 cfs to 340 cfs.

Surface Water Supply Index (SWSI) was +3.3 for the Smith River and +3.2 for the Musselshell River.

SMITH-JUDITH-MUSSELSHELL RIVER BASINS
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SHEEP CREEK nr White Sulphur Springs	MAY-JUL	19.6	22	23	141	24	26	16.3
	MAY-SEP	23	26	27	141	29	31	19.2
SMITH RIVER blw Eagle Creek	MAY-JUL	90	108	120	139	132	150	86
	MAY-SEP	101	130	150	140	170	199	107
NF MUSSELSHELL near Delpine	MAY-JUL	3.58	4.51	5.15	136	5.79	6.72	3.80
	MAY-SEP	4.40	5.50	6.25	136	7.00	8.10	4.60
SF MUSSELSHELL abv Martinsdale	MAY-JUL	33	49	60	130	71	87	46
	MAY-SEP	37	54	65	130	76	93	50

SMITH-JUDITH-MUSSELSHELL RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SMITH RIVER	10.6	10.3	10.2	9.1
NEWLAN CREEK		NO REPORT		
BAIR	7.0	5.2	5.0	5.8
MARTINSDALE	23.1	15.0	20.8	12.4
DEADMAN'S BASIN	72.2	64.5	68.8	54.4

SMITH-JUDITH-MUSSELSHELL RIVER BASINS
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SMITH	6	138	149
JUDITH	7	158	138
MUSSELSHELL	6	168	152
SMITH-JUDITH-MUSSELSHELL	13	157	147

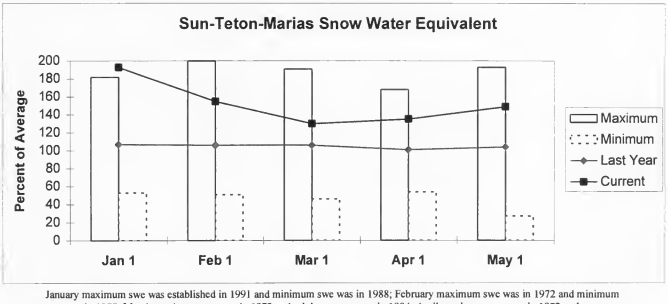
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

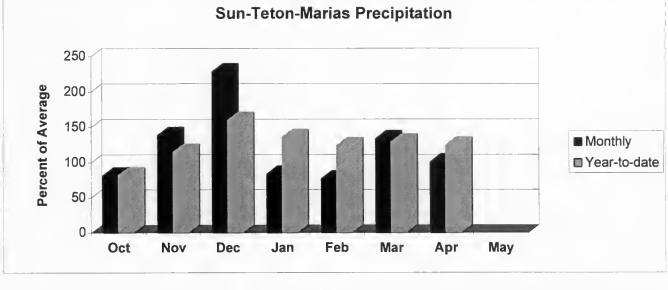
Sun-Teton-Marias River Basins

Snowpack conditions in the Sun-Teton-Marias River Basins were well above average and sixth highest for the period 1961 to 1996. Snow water content in the Sun River was 55 percent above average and 50 percent above last year; the Teton River was 50 percent above average and 37 percent above last year; and the Marias River was 43 percent above average and 39 percent above last year.



January maximum swe was established in 1991 and minimum swe was in 1988; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe was in 1972 and minimum swe was in 1984; April maximum swe was in 1972 and minimum swe was in 1984; May maximum swe was in 1972 and minimum swe was in 1977; and June maximum was in 1982 and minimum swe was in 1992. Average is for the period 1961 through 1990.

Mountain and valley precipitation during April was 1 percent above average and 10 percent above last year. Water year precipitation, beginning October 1, 1996, was 25 percent above average and 1 percent above last year. Mountain and valley precipitation in the Sun River during April was 11 percent above average and 14 percent below last year; the Teton River was 6 percent above average and 22 percent above last year; and the Marias River was 5 percent below average and 16 percent above last year.



Reservoir storage, on the last day of April, was 21 percent above average and 10 percent below last year. Gibson storage was 30 percent below average and 35 percent below last year (this is due to the large inflow expected from this years snow melt); Pishkun storage was 41 percent above average and 2 percent below last year; Willow Creek storage was 50 percent below average and 46 percent below last year; Lower Two Medicine Lake storage was 16 percent below average and 40 percent below last year; Four Horns Lake storage was 4 percent below average and 13 percent above last year; Swift storage was 27 percent below average and 47 percent below last year; Lake Frances storage was at average and 19 percent below last year; and Lake Elwell (Tiber) storage was 32 percent above average and 5 percent below last year.

Streamflows, for the period May through July, are forecast to be 42 percent above average and 22 percent above last year.

Inflow into Gibson Reservoir is forecast to reach peak flows between June 2 and June 3 with daily peak flows ranging from 8,800 cfs to 13,000 cfs; inflow into Swift Reservoir is forecast to reach peak flows between June 5 and June 9 with daily peak flows ranging from 850 cfs to 1,160 cfs.

Surface Water Supply Index (SWSI) was +3.1 for the Sun River; +3.1 for the Teton River; +3.0 for the Marias River; and +3.1 for Birch/Dupuyer Creeks.

SUN-TETON-MARIAS RIVER BASINS
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SUN RIVER at Gibson Dam (2)	MAY-JUL	497	558	600	136	642	703	441
	MAY-SEP	555	620	665	136	710	775	489
TWO MEDICINE RIVER near Browning (2)	MAY-JUL	213	250	275	147	300	337	187
	MAY-SEP	228	265	290	145	315	352	200
BADGER CREEK near Browning (2)	MAY-JUL	100	115	125	134	135	151	93
	MAY-SEP	118	134	145	132	156	172	110
SWIFT RESERVOIR Inflow near Dupuyer	MAY-JUL	60	72	80	131	88	100	61
	MAY-SEP	74	87	95	130	103	116	73
DUPUYER CREEK near Valier	MAY-JUL	7.3	14.9	20	153	25	33	13.1
	MAY-SEP	9.3	17.2	23	150	28	36	15.0
CUT BANK CREEK at Cut Bank	MAY-JUL	96	106	112	149	118	128	75
	MAY-SEP	108	118	125	149	132	142	84
MARIAS RIVER near Shelby (2)	MAY-JUL	470	536	580	150	624	690	387
	MAY-SEP	521	586	630	147	674	739	428

SUN-TETON-MARIAS RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
GIBSON	99.1	40.0	61.9	57.2
PISHKUN	32.0	35.7	36.6	25.4
WILLOW CREEK	32.2	12.4	28.3	24.6
LOWER TWO MEDICINE LAKE	11.9	7.5	12.4	8.9
FOUR HORNS LAKE	19.2	12.3	10.9	12.8
SWIFT	30.0	13.3	25.3	18.3
LAKE FRANCES	112.0	77.3	95.8	77.6
LAKE ELWELL (TIBER)	1347.0	810.1	850.2	611.4

SUN-TETON-MARIAS RIVER BASINS
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of ========== Last Yr	Average
SUN	7	150	155
TETON	4	137	150
MARIAS	6	140	143
SUN-TETON-MARIAS	14	144	150

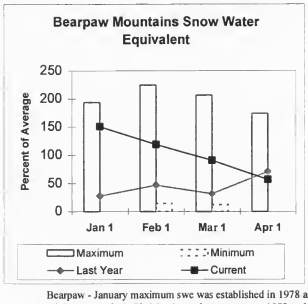
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

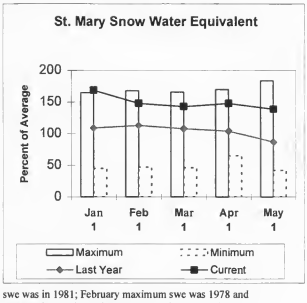
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

St. Mary and Milk River Basins

Snowpack conditions in the St. Mary were well above average and fifth highest for the period 1961 to 1996. The Bearpaw Mountains in the Milk River were below average. Snow water content in the St. Mary River Basin was 42 percent above average and 65 percent above last year. The Bearpaw Mountains snow water content was 20 percent below average and 136 percent above last year.

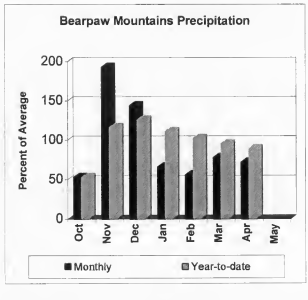


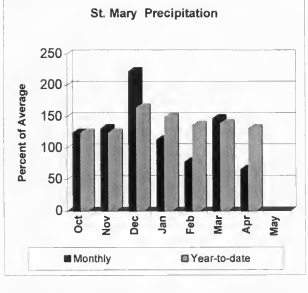


Bearpaw - January maximum swe was established in 1978 and minimum swe was in 1981; February maximum swe was 1978 and minimum was in 1973; March maximum swe was 1978 and minimum swe was 1981; April maximum swe was in 1975 and minimum swe was in 1983; May maximum swe wa 1975 and the minimum has ocurred in several years. Average is for the period 1961 through 1990.

St. Mary - January maximum swe was established in 1991 and minimum swe was in 1988; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe was in 1972 and minimum swe was in 1977; April maximum swe was in 1972 and minimum swe was in 1992; May maximum swe was in 19972 and minimum swe was in 1977; and June maximum swe was in 1991 and minimum swe was 1992. Average is for the period 1961 through 1990.

Mountain and valley precipitation in the St. Mary River during April was 34 percent below average and 39 percent below last year with the water year precipitation, beginning October 1, 1996, 31 percent above average and 1 percent below last year. Mountain and valley precipitation in the Milk River during April was 28 percent below average and 13 percent below last year with the water year precipitation, beginning October 1, 1996, 11 percent below average and 31 percent below last year.





Reservoir storage, on the last day of April, was 13 percent above average and 5 percent below last year. Lake Sherburne storage was 56 percent above average and 16 percent below last year; Fresno storage was 2 percent above average and 4 percent below last year; Beaver Creek storage was 40 percent above average and 5 percent below last year; and Nelson storage was 18 percent above average and 3 percent above last year.

Streamflows in the St. Mary, for the period May through July, are forecast to be 26 percent above average and 16 percent above last year. Streamflows in the Milk, for the period May through July, are forecast to be 23 percent above average and 21 percent above last year.

Surface Water Supply Index (SWSI) was +3.2 for the Milk River.

ST. MARY and MILK RIVER BASINS
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ====== Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SWIFTCURRENT CREEK at Sherburne (2)	MAY-JUL	112	118	122	125	126	132	98
	MAY-SEP	132	140	145	126	150	158	115
ST. MARY RIVER near Babb	MAY-JUL	444	463	475	128	487	506	371
	MAY-SEP	514	541	560	128	579	606	439
ST. MARY RIVER at US/CAN Border (2)	MAY-JUL	491	517	535	125	553	579	429
	MAY-SEP	572	610	635	126	660	698	506
MILK RIVER at Western Crossing	MAY-JUL	25	31	35	140	39	46	25
	MAY-SEP	27	33	37	137	41	47	27
MILK RIVER at Eastern Crossing (2)	MAY-JUL	27	40	48	133	56	69	36
	MAY-SEP	43	53	60	133	67	77	45
BEAVER CREEK near Havre	MAY-JUL	-3.00	0.42	2.75	35	5.08	8.50	7.80

ST. MARY and MILK RIVER BASINS
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
LAKE SHERBURNE	64.3	32.4	38.7	20.8
FRESNO	127.0	97.5	101.5	95.8
BEAVER CREEK	3.5	3.5	3.7	2.5
NELSON	66.8	50.2	48.7	42.7

ST. MARY and MILK RIVER BASINS
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
ST. MARY	8	165	142
BEARPAW MOUNTAINS	6	236	80
CYPRESS HILLS, CANADA	0	0	0
MILK RIVER BASIN	6	236	80
ST. MARY & MILK BASINS	14	165	141

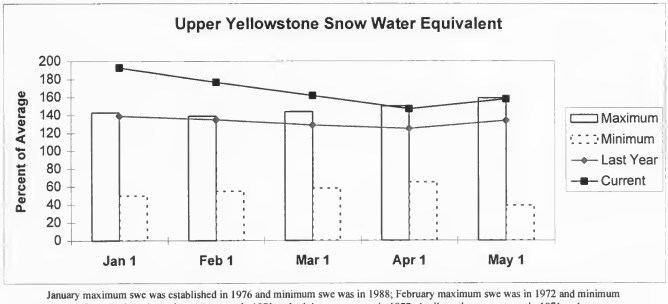
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

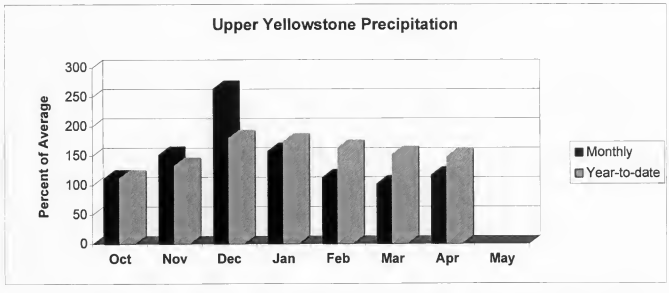
Upper Yellowstone River Basin

Snowpack conditions in the Upper Yellowstone River Basin were well above average and tied with the previous high year of 1971, for the period 1961 to 1996. Snow water content was 58 percent above average and 18 percent above last year.



January maximum swe was established in 1976 and minimum swe was in 1988; February maximum swe was in 1972 and minimum swe was in 1977; March maximum swe was in 1971 and minimum swe was in 1977; April maximum swe was in 1971 and minimum swe was in 1981; May maximum swe was in 1971 and minimum swe was in 1987; and June maximum swe was 1982 and minimum swe was in 1987 and 1994. Average is for the period 1961 through 1990.

Mountain precipitation during April was 17 percent above average and 7 percent above last year. Valley precipitation during April was 11 percent above average and 22 percent above last year. Water year precipitation, beginning October 1, 1996, was 46 percent above average and 14 percent above last year.



Reservoir storage, on the last day of April, was 8 percent above average and 7 percent above last year. Mystic Lake storage was 95 percent below average and 67 percent below last year and Cooney storage was 18 percent above average and 9 percent above last year.

Streamflows, for the period May through July, are forecast to be 58 percent above average and 26 percent above last year.

The Yellowstone River at Corwin Springs is forecast to reach peak flows between June 19 and June 24 with daily peak flows ranging from 25,000 cfs to 30,900 cfs or 43 percent to 76 percent above average; the Yellowstone at Livingston is forecast to reach peak flows between June 19 and June 24 with daily peak flows ranging from 28,500 cfs to 35,000 cfs or 35 percent to 69 above average; the Boulder near Big Timber is forecast to reach peak flows between June 19 and June 24 with daily peak flows ranging from 6,300 cfs to 8,900 cfs or 21 percent to 70 percent above average; the Stillwater near Absarokee is forecast to reach peak flows between June 17 and June 24 with daily peak flows ranging from 8,000 cfs to 11,000 cfs or 21 percent to 67 percent above average; the Clarks Fork near Belfry is forecast to reach peak flows between June 19 and June 24 with daily peak flows ranging from 9,200 cfs to 13,000 cfs or 19 to 69 percent above average; the Yellowstone at Billings is forecast to reach peak flows between June 19 and June 24 with daily peak flows ranging from 58,000 cfs to 74,000 cfs or 36 percent to 73 percent above average.

Surface Water Supply Index (SWSI) was +3.8 for the Yellowstone River above Bighorn River; +3.9 for the Yellowstone River above Livingston; +4.0 for the Shields River; +3.9 for the Boulder River; +3.4 for the Stillwater River; +3.5 for the Rock/Red Lodge Creeks; and +4.0 for the Clarks Fork River.

UPPER YELLOWSTONE RIVER BASIN
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
YELLOWSTONE at Lake Outlet	MAY-JUL	707	756	790	147	824	873	538
	MAY-SEP	1013	1074	1115	148	1156	1217	756
YELLOWSTONE RIVER at Corwin Springs	MAY-JUL	2241	2324	2380	157	2436	2519	1516
	MAY-SEP	2728	2830	2900	157	2970	3072	1844
YELLOWSTONE RIVER near Livingston	MAY-JUL	2589	2700	2775	160	2850	2961	1737
	MAY-SEP	3151	3287	3380	159	3473	3609	2123
SHIELDS RIVER near Livingston	MAY-JUL	181	207	225	168	243	269	134
	MAY-SEP	204	231	250	166	269	296	151
BOULDER RIVER at Big Timber	MAY-JUL	434	467	490	152	513	546	322
	MAY-SEP	471	506	530	151	554	589	350
WEST ROSEBUD CREEK near Roscoe (2)	MAY-JUL	83	89	93	155	97	103	60
	MAY-SEP	109	116	120	156	125	131	77
STILLWATER RIVER nr Absarokee (2)	MAY-JUL	615	678	720	152	762	825	474
	MAY-SEP	762	823	865	152	907	968	569
CLARKS FORK RIVER near Belfry	MAY-JUL	676	720	750	148	780	824	508
	MAY-SEP	757	804	835	148	866	913	566
RED LODGE CREEK blw Cooney Res (2)	MAY-JUL	34	48	57	150	66	80	38
	MAY-SEP	52	65	74	151	83	96	49
YELLOWSTONE RIVER at Billings (2)	MAY-JUL	4666	5112	5415	163	5718	6164	3320
	MAY-SEP	5931	6142	6470	164	6798	6999	3954

UPPER YELLOWSTONE RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
MYSTIC LAKE	21.0	0.1	0.3	1.9
COONEY	27.4	22.9	21.1	19.4

UPPER YELLOWSTONE RIVER BASIN
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
YELLOWSTONE ab LIVINGSTON	15	113	162
SHIELDS	6	165	174
BOULDER-STILLWATER	4	112	154
CLARK'S FORK-ROCK CREEK	13	108	145
UPPER YELLOWSTONE RIVER	34	118	158

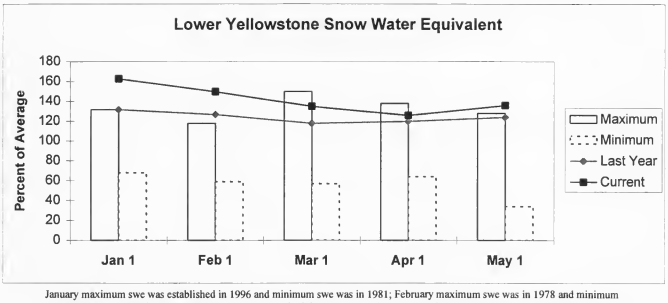
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

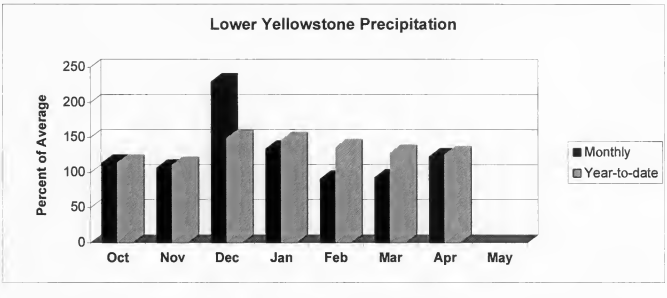
Lower Yellowstone River Basin

Snowpack conditions in the Lower Yellowstone River Basin were well above average and second highest for the period 1961 to 1996. Snow water content was 36 percent above average and 10 percent above last year.



January maximum swe was established in 1996 and minimum swe was in 1981; February maximum swe was in 1978 and minimum swe was in 1981; March maximum swe was in 1986 and minimum swe was in 1977; April maximum swe was in 1986 and minimum swe was in 1981; May maximum swe was in 1986 and minimum swe was in 1981; and June maximum swe was in 1995 and minimum swe was in 1994. Average is for the period 1961 through 1990.

Mountain and valley precipitation during April was 23 percent above average and 12 percent above last year. Water year precipitation, beginning October 1, 1996, was 26 percent above average and 5 percent above last year..



Reservoir storage, on the last day of April, was 13 percent below average and 10 percent below last year. Bighorn Lake storage was 11 percent below average and 9 percent below last year (this is due to well above average inflow from this years very high snow water content) and the Tongue River storage was 51 percent below average and 34 percent below last year (this is due to construction on the dam).

Streamflows, for the period May through July, are forecast to be 59 percent above average and 23 percent above last year.

Surface Water Supply Index (SWSI) was +3.5 for the Yellowstone River below Bighorn River; +3.1 for the Bighorn River below Bighorn Lake; +1.6 for the Little Bighorn River; +1.8 for the Tongue River; and +1.9 for the Powder River.

LOWER YELLOWSTONE RIVER BASIN
Streamflow Forecasts - May 1, 1997

Forecast Point	Forecast Period	<<====== Drier ===== Future Conditions ====== Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
YELLOWSTONE RIVER at Billings (2)	MAY-JUL	4666	5112	5415	163	5718	6164	3320
	MAY-SEP	5931	6142	6470	164	6798	6999	3954
BIGHORN RIVER nr St. Xavier (2)	MAY-JUL	2161	2357	2490	165	2623	2819	1508
	MAY-SEP	2275	2587	2720	163	2853	3212	1673
LITTLE BIGHORN RIVER nr Hardin	MAY-JUL	87	120	143	121	166	199	118
	MAY-SEP	100	138	163	121	188	226	135
TONGUE RIVER stateline nr Decker (2)	MAY-JUL	157	200	230	111	260	303	208
	MAY-SEP	157	224	255	112	286	345	227
YELLOWSTONE RIVER at Miles City (2)	MAY-JUL	6762	7606	8180	165	8754	9598	4957
	MAY-SEP	8519	9039	9670	166	10301	10853	5835
POWDER RIVER at Moorhead	MAY-JUL	151	180	200	110	220	249	182
	MAY-SEP	175	205	225	110	245	275	204
POWDER RIVER near Locate	MAY-JUL	157	201	230	109	259	303	211
	MAY-SEP	103	221	260	111	299	461	234
YELLOWSTONE RIVER nr Sidney (2)	MAY-JUL	6447	7699	8550	159	9401	10653	5383
	MAY-SEP	8963	9841	9880	158	10906	11784	6268

LOWER YELLOWSTONE RIVER BASIN
Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
BIGHORN LAKE	1356.0	700.8	767.1	789.2
TONGUE RIVER	68.0	18.0	27.4	36.6

LOWER YELLOWSTONE RIVER BASIN
Watershed Snowpack Analysis - May 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WIND RIVER (Wyoming)	20	121	152
SHOSHONE RIVER (Wyoming)	6	102	153
BIGHORN RIVER (Wyoming)	20	103	136
LITTLE BIGHORN (Wyoming)	3	101	108
TONGUE RIVER (Wyoming)	9	104	115
POWDER RIVER (Wyoming)	8	104	123
LOWER YELLOWSTONE RIVER	47	110	136
YELLOWSTONE BASIN	76	115	146

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural volume - actual volume may be affected by upstream water management.

Federal Building, Room 443
10 E. Babcock
Bozeman, MT 59715

Montana
Basin Outlook Report

Natural Resources Conservation Service
Bozeman, MT